

ORIGINAL NEW APPLICATION



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BEFORE THE ARIZONA CORPORATION C

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AZ CORP COMMISSION
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Arizona Corporation Commission

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IN THE MATTER OF THE
APPLICATION OF ARIZONA PUBLIC
SERVICE COMPANY FOR APPROVAL
OF RENEWABLE ENERGY STANDARD
IMPLEMENTATION PLAN,
DISTRIBUTED ENERGY
ADMINISTRATION PLAN, CUSTOMER
SELF-DIRECT RENEWABLE
RESOURCE TARIFF, AND RESET OF
RENEWABLE ENERGY ADJUSTOR

Docket No. E-01345A-07-01345A-07-0468

REQUEST FOR APPROVAL OF
RES IMPLEMENTATION PLAN
AND DISTRIBUTED ENERGY
ADMINISTRATION PLAN:
REQUEST FOR APPROVAL OF
CUSTOMER SELF-DIRECT
RENEWABLE RESOURCE TARIFF
AND REQUEST FOR RESET OF
RENEWABLE ENERGY
ADJUSTOR

AND REQUEST FOR
CONSOLIDATION

Arizona Public Service Company ("APS" or "Company") is making this filing in compliance with the Arizona Corporation Commission's ("Commission") comprehensive Renewable Energy Standard ("RES") Rules, A.A.C. R14-4-1801 *et. seq.* APS hereby files its Implementation Plan, as required by A.A.C. R-14-2-1813; its Uniform Credit Purchase Program, as required by A.A.C. R-14-2-1810, which the Company refers to as its Distributed Energy Administration Plan ("DEAP"); its Reset of the Company's authorized Renewable Energy Adjustor Rate Schedule, as required by A.A.C. R-14-2-1808(D); and its Customer Self-Directed Renewable Energy Resources Tariff, as required by A.A.C. R-14-2-1809.

The Company is seeking approval of its Implementation Plan and the DEAP, which reflect full compliance with all provisions of the recently adopted RES Rules. The Implementation Plan describes the Company's approach to fully implement the RES requirements for distributed generation, which would allow individuals and businesses to access funding to

1 facilitate the widespread application of renewable resources, as well as the Company's approach
2 for acquiring the renewable generation resources necessary to meet the RES Rules' Renewable
3 Energy Requirements.¹

4 The RES Rules set out three approaches for a utility company to request funding to meet
5 the requirement of the rules: by filing a tariff;² by filing a request to reset a previously- authorized
6 renewable energy adjustor mechanism;³ or by filing a rate case.⁴ Because the Commission has
7 previously authorized a renewable energy adjustor for APS ("Adjustor"), the Company is seeking
8 to reset the current Adjustor mechanism. Under the current Adjustor, the Company would collect
9 approximately \$10 million in 2008, along with another \$6 million in base rates. To fully comply
10 with RES Rules, APS is estimating that it would require an additional \$33.2 million, for a total of
11 \$49.2 million in 2008. Therefore, the current Adjustor must be reset to collect \$43.2 million,
12 which will result in an Adjustor rate of \$0.004737 /kWh, with monthly caps of \$1.89 for
13 residential customers, \$70.39 for commercial and industrial customers less than 3 MW, and
14 \$211.16 for commercial and industrial customers greater than 3 MW. These estimates assume the
15 same proportionality between rate classes that is in place with the current Adjustor, as required by
16 Decision No. 67744.

17 As part of this filing, the Company is also seeking clarification that the RES Rules are the
18 standard that applies to renewable energy issues for APS, so that certain rulings that pertain to the
19 former Environmental Portfolio Standard ("EPS") Rule,⁵ are no longer applicable or legally
20 binding. Specifically, the Company is seeking clarification that for APS, the RES Rules have
21 superseded the EPS Rule, and that the partial variance of the EPS Rule granted in Decision No.
22 66565 has also been superseded.

23 The Company further requests that the Commission makes a determination on all these
24 related issues, and requests that these matters be consolidated.

26 ¹ See, A.A.C. R14-2-1804 and 1805.

27 ² A.A.C. R-14-2-1808(A).

28 ³ A.A.C. R-14-2-1808(D).

⁴ A.A.C. R-14-2-1808(E).

⁵ A.A.C. R14-2-1618.

1 **A. IMPLEMENTATION PLAN**

2 The RES Rules require that the Company file an annual plan that describes how it intends
3 to comply with the RES Rules for the next calendar year for Commission review and approval.
4 In compliance with that provision, APS hereby provides its Implementation Plan that describes, to
5 the extent possible:

6 1. The Eligible Renewable Energy Resources⁶ technology that the Company is
7 proposing to be added each of the next five years and a description of the kW and kWh expected
8 to be obtained from each of those resources;

9 2. The estimated cost of those Eligible Renewable Energy Resources, including cost
10 per kWh and total cost per year;

11 3. A description of how each Eligible Renewable Energy Resource will be obtained;

12 4. A proposal that evaluates whether the Company's existing rates allow for the
13 ongoing recovery of the reasonable and prudent costs of complying with the RES Rules; and

14 5. A line item budget that allocates specific funding.

15 The Company's Implementation Plan is attached as Exhibit A. (Because the Implementation Plan
16 contains competitively confidential information, that information has been redacted in the version
17 filed in Docket Control. The information will be provided to Commission Staff and other
18 appropriate parties to this proceeding upon execution of a confidentiality agreement.)

19 The Company has addressed each of these provisions to the best of its ability at this time.
20 It is expected that expansive provisions of the new RES Rules will spur the development of new
21 and improved renewable energy technologies and applications. Because this is the first
22 Implementation Plan to be filed under the recently adopted RES Rules, there remains much
23 uncertainty as to renewable energy markets in the future. As a result, the Company has prepared
24 its best estimate of technologies that may be available to the marketplace in the next five years,
25 evaluating all the information that is available to it at this time.

26 In compliance with R14-2-1810(B), APS is filing its DEAP, which is the Company's
27 Uniform Credit Purchase Program. The DEAP incorporates virtually all of the preliminary

28

⁶ See, A.A.C. R-14-2-1802.

1 recommendations reached by an informal working group that was established by Commission
2 Staff during 2006. The DEAP, which addresses the consumer participation process, budgets,
3 incentive levels, eligible technologies, system requirements and installation requirements,
4 provides a program that will encourage customer participation. The Company's DEAP is
5 attached as Exhibit B.

6 **B. MODIFICATION OF THE ADJUSTOR MECHANISM**

7 APS is also seeking funding for recovery of its reasonable and prudent costs of
8 implementation and compliance with the RES Rules, through a modification to its current
9 Adjustor, as provided for in RES Rule R-14-2-1808(D). The Company is requesting that the
10 Commission reset its current Adjustor⁷ to \$0.004737 /kWh to cover its costs for full compliance
11 with the RES Rules. Although the Company has analyzed alternatives, the proposed RES
12 Adjustor rates maintain the proportionality adopted in Decision No. 67744. The Company's
13 Implementation Plan provides the data necessary to support the level of costs the Company
14 believes will be incurred, and the data necessary to demonstrate that the proposed rate schedule is
15 designed to recover only costs in excess of market cost of comparable generation. The proposed
16 Renewable Energy Standard Rate Schedule is attached as Exhibit C.

17 **C. APPROVAL OF SELF-DIRECT TARIFF**

18 RES Rule R-14-2-1809(A) requires the Company to file a tariff under which an Eligible
19 Customer⁸ may apply to receive funds to install Distributed Renewable Energy Resources.
20 Details regarding the Self-Direct program are included in the Company's DEAP. The proposed
21 Customer Self-Directed Renewable Resources tariff is attached as Exhibit D.

22 **D. NATURAL GAS DISPLACEMENT – PARTIAL VARIANCE**

23 In Decision No. 66565, the Commission granted a partial variance to A.A.C. R14-2-1618
24 to allow for solar thermal energy that replaced natural gas usage to be recognized for the
25 Environmental Portfolio Standard ("EPS"). That rule required utilities to derive a portion of their
26 total retail energy sold from new solar resources or environmentally friendly renewable electricity

27 ⁷ The Company's current Adjustor was authorized in Decision No. 67744 (April 7, 2005).

28 ⁸ Under the RES Rules, an "Eligible Customer" is an entity that pays tariff funds of at least \$25,000 annually for any number of related accounts or services within an Affected Utility's service area. A.A.C. R-14-2-1801(H).

1 technologies. The EPS rule⁹ allowed up to 20 percent of the portfolio requirement to be met with
2 solar water heating or solar air conditioning systems, and specified that solar water heaters must
3 replace or supplement the use of electric water heaters. (Emphasis added.)

4 In Decision No. 66565, the Commission granted APS a partial variance to that rule, which
5 allowed a limited amount of renewable solar thermal energy that replaced natural gas usage to be
6 recognized for the EPS. Specifically, no more than two customer installations per calendar year,
7 with a total displacement of natural gas not to exceed 60,000 therms per calendar year would be
8 applicable to the EPS requirements. The installations pursuant to this partial variance were
9 limited to the displacement of existing natural gas water heating systems, and could not utilize the
10 EPS funding for the displacement of natural gas in new construction. In addition, any
11 supplemental or backup water heating system using gas was required to use natural gas to be
12 eligible to receive EPS funding for solar hot water system conversion.

13 The RES Rules are silent regarding a requirement that solar energy must replace or
14 supplement of the use of electricity. Therefore, but for the mandate of Decision No. 66565, APS
15 believes that solar appliances that displace natural gas can be claimed as a credit toward meeting
16 the annual renewable energy requirement of the RES Rules. It is for that reason that the
17 Company is requesting that the Commission clarify that the partial variance provisions of
18 Decision No. 66565 are superseded by the RES Rules.

19 **E. CLARIFICATION THAT RES RULES SUPERSEDE THE EPS RULES.**

20 The Company believes that it was the intent of the Commission that the RES Rules
21 replace and supersede the EPS Rule, yet there is no specific provision in the RES Rules to that
22 effect. The RES Rules allow for a wider variety of renewable resources, which results in conflict
23 with the narrow provisions of the EPS Rule.¹⁰ The RES Rules also include comprehensive annual
24 reporting requirements, such as requiring a Company to report: the actual kWh of energy
25 obtained from Eligible Renewable Energy Resources;¹¹ the kW of generation capacity,

26 ⁹ A.A.C. R14-2-1618(K).

27 ¹⁰ The EPS Rule limited renewable resources to solar resources and in-state landfill gas generators, wind generators
and biomass generators. A.A.C. R14-2-1618. The RES Rules have significantly broadened the kinds of renewable
resources that qualify, and allow for out-of-state resources. A.A.C. R14-2-2-1802.

28 ¹¹ A.A.C. R14-2-1812(B)(1).

disaggregated by technology type;¹² the cost information regarding cents per actual kWh of energy obtained from Eligible Renewable Energy Resources and cents per kW of generation capacity, disaggregated by technology type;¹³ and the breakdown of Renewable Energy Credits ("RECs") used to satisfy both the Annual Renewable Energy Requirement and the Distributed Renewable Energy Requirement and appropriate documentation of the Affected Utility's receipt of those RECs.¹⁴ APS believes that the RES Rules reporting requirements have subsumed similar reporting requirements in other dockets, but unless this position is acknowledged by the Commission, the Company will have to comply with both EPS and RES requirements. Similarly, the Company has reporting requirements related to renewable energy resources from other previous Commission dockets, such as the 1994 Integrated Resource Planning docket,¹⁵ which the Company believes are appropriately subsumed in the RES Rules reporting requirements. [See, attached Exhibit E, which reflects the Company's current reporting requirements.] For these reasons, APS requests that the Commission clarify that the EPS Rule has been rendered unnecessary with the adoption of the RES Rules, and that APS must comply only with the requirements of the RES Rules, rendering reporting requirements in other dockets unnecessary.

F. REQUEST FOR CONSOLIDATION

All the issues raised herein are substantially the same, and interested parties will suffer no prejudice in having these cases consolidated. Therefore, for purposes of administrative efficiency, the Company requests that the Commission consolidate these matters.

G. CONCLUSION

For the reasons discussed above, APS requests that the Commission consolidate these matters for determination and issue an order that:

1. Approves the Company's Implementation Plan;
2. Approves the Company's Distributed Energy Administration Plan;
3. Approves the reset of Company's renewable energy adjustor rate;
4. Approves the Company's Self-Directed Renewable Resources tariff;

¹² A.A.C. R14-2-1812(B)(3).

¹³ A.A.C. R14-2-1812(B)(4).

¹⁴ A.A.C. R14-2-1812(B)(5).

¹⁵ Docket No. U-0000-93-052.

1 5. Clarifies that the RES Rules supersede the partial variance provisions of Decision
2 No. 66565 related to the displacement of natural gas usage by solar thermal energy; and

3 6. Clarifies that for APS, the RES Rules supersede the provisions of the EPS Rule
4 and other reporting requirements related to renewable energy resources.

5 RESPECTFULLY SUBMITTED this 7th day of August, 2007.

6 ARIZONA PUBLIC SERVICE COMPANY

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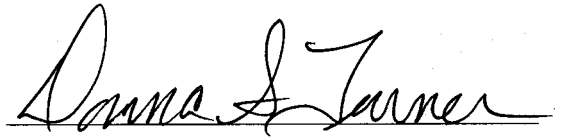
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APS 2007 Renewable Energy Standard

Attachment A

APS Renewable Energy Implementation Plan

ATTACHMENT A

APS RES Implementation Plan 2008 to 2012



Arizona Public Service Co.

**APS Implementation Plan
2008 to 2012
For The
Renewable Energy Standard**

****REDACTED VERSION****

ATTACHMENT A
APS RES Implementation Plan 2008 to 2012
TABLE OF CONTENTS

1.	Executive Summary	1
2.	Introduction	1
	A. Renewable Energy Requirements	1
	B. Renewable Generation Challenges and Risks.....	2
	C. Distributed Energy Targets	3
	D. Required Program Funding.....	4
3.	2007 APS Implementation Plan.....	5
	A. Energy	5
	B. Capacity	5
	C. Renewable Generation	6
	i. Existing Renewable Generation.....	6
	ii. Renewable Generation Procurement Plan and Process	6
	iii. Identifying Renewable Generation Requirements	7
	D. Distributed Energy	8
	i. Anticipated Distributed Energy Program Outcomes	9
	ii. Key Tenets of the Proposed Distributed Energy Administration Plan	9
	iii. Distributed Energy Incentive Budgets	10
	iv. Marketing, Advertising and Partnership Development	11
	E. Implementation and Administration	12
	i. Resources Required for the Renewable Generation Program.....	12
	ii. Resources Required for the Distributed Energy Program.....	13
	F. Renewable Technology Commercialization and Integration.....	15
4.	Costs of Program Implementation	16

ATTACHMENT A

APS RES Implementation Plan 2008 to 2012

ATTACHED EXHIBITS

Exhibit 1	APS RES Program Summary
Exhibit 2	Budget Summary
Exhibit 3	Renewable Generation
Exhibit 3A	Renewable Generation - Energy
Exhibit 3B	Renewable Generation - Capacity
Exhibit 3C	Renewable Generation - Cost Above Conventional Generation
Exhibit 3D	Renewable Generation - Cost Above Conventional Generation per MWh
Exhibit 4	Distributed Generation
Exhibit 4A	Program Assumptions
Exhibit 4B	Costs and Projected Outcomes
Exhibit 4C	Projected Outcomes by Technology

ATTACHMENT A

APS RES Implementation Plan 2008 to 2012

1. EXECUTIVE SUMMARY

Arizona Public Service Company ("APS" or "Company") has prepared this Implementation Plan for the five year period 2008-2012 (the "Plan"), in compliance with the Renewable Energy Standard and Tariff ("RES").¹ The RES Rules require that APS file an annual plan that describes how it intends to comply with the rule requirements for the next five years. In compliance with that provision, APS has prepared this Implementation Plan, which describes the renewable energy resources that may be added during the next five years, the estimated customer funding and tariff amounts required to acquire those resources, and a budget that allocates specific funding. The RES requirement begins at 1.75% of total retail sales in 2008 and requires 10% of the renewable energy to come from distributed energy solutions.

As a separate document, the Company is filing its Distributed Energy Administration Plan ("DEAP"), which incorporates the preliminary recommendations reached by an informal Uniform Credit Purchase Program ("UCPP") working group that was established by Commission Staff during 2006. The DEAP addresses the participation process for a wide range of customers, incentive levels, eligible technologies and system requirements, providing a program that APS believes will encourage customer participation.

APS currently estimates the cost to comply with the RES to be \$49 million in 2008 and increasing to \$97 million by 2012, with a five year total of \$353 million. RES funding is intended to cover the cost of utility scale renewable generation in excess of the cost of conventional resource alternatives, incentive payments for distributed energy resources, marketing expenses, and program implementation and administration costs. The costs for renewable generation are based on APS's most current insights into that market. The costs for distributed energy incentives and the program budget are based on incentives developed as part of the Commission Staff's working group and APS's best estimations of market uptake for the various technologies available to consumers.

Annual increases in the program budget are driven mainly by the annually increasing energy targets. At this time, APS is requesting adjustor funding of \$43 million for 2008 (the current EPS adjustor would collect approximately \$10 million in 2008). The requested adjustor amount, along with the \$6 million collected in base rates, would total the \$49 million of funding needed to meet the requirement.

2. INTRODUCTION

A. Renewable Energy Requirements

APS has prepared this Implementation Plan in 2007 for the five year period 2008-2012 in compliance with the RES, Arizona Administrative Code R14-2-1801 through R14-2-1815. The RES requires that affected utilities satisfy an annual renewable energy requirement by providing a percentage of their electric retail sales from renewable resources. The required percentage for

¹ A.A.C. R14-2-1801 *et. seq.*

ATTACHMENT A

APS RES Implementation Plan 2008 to 2012

the current implementation period begins at 1.75% in 2008 and increases to 3.50% in 2012.² That minimum percentage increases to 15% of the utility's retail sales by the year 2025.³

Renewable resources under this rule include "renewable generation" projects, which are constructed solely to export their energy production to the utility, and distributed energy ("DE"), which is a renewable resource application acquired, installed, and operated by customers on their premises that is used to displace the customer's energy consumption.⁴ As part of the RES, the energy generated or displaced by the DE is applied towards the percentage of the utility's distributed renewable energy requirement.⁵ In both the instance of Renewable Generation and DE, the unit used to track kilowatt hours ("kWh") derived from renewable resources for purposes of compliance with the RES is the Renewable Energy Credit⁶ ("REC"), where one kWh equals one REC.

The RES requires affected utilities to file an Implementation Plan each year for review and approval by the Arizona Corporation Commission ("ACC" or "Commission").⁷ The Plan must describe the procurement of renewable energy resources for the next five calendar years that will meet the requirements of the RES.⁸ This description must identify the considered technologies, the expected schedule for the resource incorporation on a year by year basis, and a description of the kilowatts ("kW") and kWh that are expected to be added to the APS portfolio by the incorporation of those resources.⁹ The RES provides that costs incurred by the effected utility that are consistent with the approved Plan shall be deemed reasonable. Further, the RES provides that implementation of the approved Plan by the utility shall serve to measure the utility's compliance with the RES. Attached in Exhibit 1 is a summary of the APS targets, energy requirements, and program budget.

B. Renewable Generation Challenges and Risks

In developing this Plan, APS has evaluated renewable resources that are available for procurement in the next one to two years ("the near-term"), as well as those speculated to become available over the remainder of the five year period covered by this Plan and beyond ("the longer-term"). Although uncertainty exists in the specific details of many of those renewable resources, APS believes it has chosen a strategy that will meet or exceed the minimum renewable resource energy targets identified in the RES.

The first five years of APS's implementation strategy for achieving compliance with RES targets are detailed in this Plan. This Plan and the resulting renewable energy goals do not come without some risk related to meeting the renewable resource targets. Inasmuch as those risks are

² A.A.C. R14-2-1804(B).

³ *Id.*

⁴ A.A.C. R14-2-1802.B.

⁵ A.A.C. R14-2-1805.B.

⁶ "Renewable Energy Credit" means the unit created to track kWh derived from an Eligible Renewable Resource of kWh equivalent of Conventional Energy Resource displaced by Distributed Renewable Resources." A.A.C. R14-2-1801.N.

⁷ A.A.C. R14-2-1813.A.

⁸ A.A.C. R14-2-1813.B.

⁹ *Id.*

ATTACHMENT A

APS RES Implementation Plan 2008 to 2012

presently definable and quantifiable, they are identified and discussed in this Plan. Those risks include issues such as: the availability, level and consistency of federal, state and local incentives; the availability of renewable energy projects executed by financially and technically sound developers; the availability of adequate transmission resources to deliver new resources to APS load; the availability of renewable energy projects matching APS's anticipated costs profiles; the timing of new resource availability; and the ability of DE technologies and technology providers to serve the needs of customers.

APS acknowledged the risks identified above and attempted to account for them in its procurement strategy. The timely delivery of energy from renewable resources is critical to APS's compliance with the energy targets; development of these types of projects typically requires between two to five years. Recent experience across the nation indicates renewable generation projects suffer from high levels of project failure, broadly summarized as the inability to meet contract energy delivery dates. These failures and delays can be attributed to a broad range of issues, but are generally attributed to the immature nature of the renewable resource markets. Published experience with renewable energy projects in California suggests that a minimum overall contract failure rate of 20-30% should generally be expected for large solicitations.¹⁰ APS has attempted to develop an implementation plan that assumes a similar level of project failure rate to that observed in California. As a way to buffer against these risks, APS's experience with both renewable energy projects and with conventional energy technologies suggests that careful project screening can reduce, but not eliminate, some of the risk associated with project failures.

C. Distributed Energy Targets

The RES requires that affected utilities satisfy a percentage of the annual renewable energy requirement through the addition of distributed energy resources. The required percentage for the current implementation period begins at 10% of the 1.75% total requirement in 2008, and increases to 30% of the 3.5% total requirement in 2012.¹¹ That percentage remains at 30% of the total renewable energy requirement through 2025.

Considerable public discussion has surrounded the DE targets described in the RES. This discussion has centered on questions related to the magnitude of customer interest in DE, the effect of introducing many new distributed technologies, the ability of the technology suppliers and installers to meet the potential customer demand, and, ultimately, the total cost of incentives required to drive the required customer participation to meet RES compliance. The extent of customer participation is the primary driver of DE results and it is simply unknown and unknowable at this time. APS's recent experience with its Solar Partners Incentive Program demonstrated that changes in public policy affecting the program (i.e., state and federal tax incentive increases) and changes in program incentives can have dramatic impacts on customer participation, far beyond those anticipated. There is no way to accurately predict whether the amount of incentives being offered will motivate customers to participate at the necessary rate for fuel RES compliance. This is particularly germane, because even with availability of significant incentives, customers must still provide significant personal funding in order to have

¹⁰ Building a Margin of Safety into Renewable Energy Procurement, KEMA Inc., Jan 2006, CEC-300-2006-004.

¹¹ A.A.C. R14-2-1805.B.

ATTACHMENT A

APS RES Implementation Plan 2008 to 2012

DE systems installed on their homes or businesses. Today, the typical residential distributed photovoltaic system costs about \$21,000 to install, attracts about \$12,000 in government and utility incentives, and requires a customer investment of about \$9,000.

APS recognizes that DE is an important component of the renewable energy goals of the RES, and, as part of this Plan, APS proposes a funding level believed necessary for compliance. APS recognizes that uncertainty exists with respect to the proposed incentive levels and the total number of RECs that they will generate; however, in order to comply with the DE targets, APS believes the funding level is necessary if consumer demand for DE is adequate. The assumptions used to build the DE program budget are based on incentives developed as part of Commission Staff's UCPP working group, market insights from those same meetings, and APS's experience with its Solar Partners Incentive Program. If the DE program assumptions prove to be correct, the first year cost for this component of the RES Implementation Plan is estimated to be approximately \$42 million. This amount escalates to approximately \$77 million in 2012.

D. Required Program Funding

The Implementation Plan proposed by the Company is estimated to cost a total of \$353 million over the five-year period covered by this Plan. This Plan is designed to achieve compliance with the RES requirements. The cost for the first program year (2008) is estimated to be approximately \$49 million and escalates to \$97 million in 2012, driven mainly by the increasing energy targets. In this implementation plan, APS is requesting an adjustor to recover only the estimated 2008 costs of approximately \$49 million, resulting in a \$33 million increase over the \$16 million currently collected. In each succeeding year, as part of its Implementation Plan, APS will request a reset of the adjustor to collect the estimated costs for the following calendar year. Current estimates for each of those years can be seen in Exhibit 2.

Several of the exhibits contained in this Plan include pricing estimates that have been made by APS in development of the program costs. Some of the pricing included in this Plan is pricing from existing confidential contracts. The price estimates are necessary to allow APS to provide the information sought by the Commission as part of the Implementation Plan. In addition, summary expenditures and energy requirements for generation provided on a year by year basis could be used to infer much of the confidential pricing information. APS believes it is in the best interest of the Company and our customers to ensure that future suppliers of renewable resources compete for the right to supply renewable energy without a pre-conceived notion of the pricing assumptions or confidential pricing in this plan. Therefore, APS has submitted a redacted version of that confidential information and will provide Staff the competitively confidential information pursuant to an executed Confidentiality Agreement.

This Plan makes reasonable assumptions concerning renewable energy resources, and as APS gains more experience with renewable resources, future Plans will account for the realities APS encounters in the actual implementation of the RES.

ATTACHMENT A

APS RES Implementation Plan 2008 to 2012

3. 2007 APS IMPLEMENTATION PLAN

A. Energy

The RES identifies the minimum annual percentage of a utility's retail sales that must be obtained from renewable resources. The first year target covered by this Plan is the 2008 percentage of 1.75%. The renewable resource targets required to meet APS's targets for each year are detailed in Exhibit 3A. The targets detailed by the RES are described in two categories, renewable generation and distributed energy resources.

Renewable generation is represented by projects that export their energy production to the utility. These projects are typically large-scale facilities that use renewable resources such as wind, solar, geothermal, biomass, and biogas to generate electricity. Energy produced from those resources is delivered through the transmission and distribution systems and, ultimately, to the utility's customers.

Distributed energy resources are represented by technology applications that are physically installed on the customer's property. Those applications are typically specifically designed for the distributed setting. Distributed applications under the RES include a wide range of technologies; today those technologies are most frequently represented by photovoltaic and solar water heating systems. The DE displaces the customer's energy needs. It can be tied to the existing APS distribution system or it can be installed as a remote application, independent of the APS distribution system. As part of this Plan, APS does not plan to install DE at customers' properties; rather, the installation of DE is facilitated by providing customers with financial incentives for the installation of those resources by licensed contractors.

B. Capacity

The RES targets are energy based (kWh) only with no capacity (kW) requirements. However, the Plan utilizes generation capacity assumptions to forecast compliance with the energy targets. When equating energy targets to planned capacity levels, it is important to recognize that the capacity factors for various renewable generation technologies vary significantly. Some technologies, such as geothermal and biomass, are very predictable and can produce at capacity factors near 80-90%, similar to conventional base load generation. Some renewable generation technologies, such as solar, are predictable but have inherently low capacity factors of 15-30%, driven by the daily availability of solar radiation. Other renewable generation technologies, such as wind, are less predictable on a real time basis. However, wind will generally produce capacity factors in the range of 25-40% annually, depending on the characteristics of the wind resource in a given location.

The mixture of the technologies employed is critical, and the ultimate mixture will dictate the additional capacity required to achieve the energy targets. Exhibit 3B provides the level of capacity for the specific mixture of technologies assumed in this Plan for the coming five years. Exhibit 3B is not intended to be an exact representation of the resources APS intends to acquire, but merely an example of a potential resource mix, based on APS's current understanding of the

ATTACHMENT A

APS RES Implementation Plan 2008 to 2012

market. The economics of a particular resource or technology will ultimately determine the extent to which any one technology is employed as part of the overall portfolio.

C. Renewable Generation

The design of this Plan is to provide sufficient flexibility to provide the best opportunity to meet or exceed the RES target at a reasonable cost. The Plan provides descriptions of the current projects under contract, as well as the expected resource additions over the next five years.

i. Existing Renewable Generation

To date, APS has entered power purchase agreements ("PPA") for renewable generation resources totaling approximately 114 megawatts ("MW") of capacity. APS also owns and operates approximately 6 MW of solar capacity. The composition of the existing portfolio is detailed in Exhibits 3A and 3B.

ii. Renewable Generation Procurement Plan and Process

The energy required to meet the APS targets and the anticipated demand for the Green Power rates in each of the next five years is outlined in Exhibit 1. In general, two to five years is required from the initiation of an RFP to the point at which energy can flow into the APS system from a new renewable generation project. The majority of that time is required for development and construction. Therefore, an RFP started in 2007 would be expected to result in renewable energy that would apply to the renewable resource target no sooner than 2009.

APS projects that it will need energy output from renewable resources in 2008 and beyond, in addition to that which has already been contracted. Accordingly, APS implemented a competitive procurement process in 2007. The competitive procurement process will consist of, but not be limited to, the issuance of RFPs, negotiated bilateral supply contracts, and other competitive solicitations seeking long-term renewable resources. Implementing an effective competitive procurement process will ensure a fair and unbiased procedure that will efficiently incorporate a full range of renewable resources alternatives from the marketplace.

In the evaluation of bids submitted during the competitive procurement process, analysis of proposals will include an analysis of: energy production; capacity value; deliverability; technical characteristics; operational performance; reliability; efficiency; credit; and respondent experience. The procurement and project selection procedure employed by APS has been documented and certified by an independent auditor as required by the RES.¹²

This Plan attempts to fully acknowledge the reality that PPAs and project development methods will not necessarily conform to required delivery schedules and planned quantities. Renewable generation projects, like other generation projects, may fail to achieve scheduled commercial operation. A recent review of renewable projects in California stated that utilities should expect

¹² A.A.C. R14-2-1812.B.6 "...procedures for choosing Eligible Renewable Energy Resources and a certification from an independent auditor that those procedures are fair and unbiased and have been appropriately applied."

ATTACHMENT A

APS RES Implementation Plan 2008 to 2012

that 20-30% of renewable contracts experience termination or major delays.¹³ Similar project delays or failures could cause APS to fall short of its renewable energy targets. These risks require APS to design and employ contingency measures. The primary tool planned to prevent energy shortfalls resulting from these risks is a procurement goal of 120% of the target energy for three to five years into the future.

iii. Identifying Renewable Generation Requirements

During the five years covered by this Plan, the renewable resource targets increase from 1.75% in 2008 to 3.50% in 2012. In the near-term, this Plan focuses on existing and planned renewable resource projects to meet those targets. This Plan also contemplates that new renewable generation will be contracted and developed during the five year period covered by this Plan. APS has based its program budget and energy procurement on several assumptions. These are discussed below. Some details are competitively confidential and that information has been redacted. Those details will be provided to Staff pursuant to an executed Confidentiality Agreement.

1. Costs of Renewable Generation

For purposes of resource and budget planning, the costs of renewable generation are based on the portion of the renewable energy cost that is above the Market Cost of Comparable Conventional Generation.¹⁴ For existing contracts, the percentage above APS's cost for comparable generation was established at the time the contract was signed and the percentage is applied to the total contract cost for the planning year. For future contracts, the price is estimated based on existing renewable generation contracts, recent market experience, and general trends observed in renewable generation project development. These percentages will be re-evaluated during subsequent five year planning periods. All renewable resource costs are described in terms of dollars per megawatt hour ("MWh") above APS's comparable conventional generation. The detailed cost assumptions used to develop the budget for procurement of these resources are included in Exhibits 3C and 3D. Because this information is competitively confidential, it will be provided to Staff pursuant to an executed Confidentiality Agreement.

2. Planned Resource Additions

The annual increases in the renewable targets suggest that renewable generation resources can be developed and procured in increments sized to match annual increases. Making resource additions that specifically match the requirement is unlikely. As such, in some years the renewable generation procured will exceed that specifically targeted. For purposes of this discussion, those additions are referred to as "non-linear additions." The schedule of resource additions provided in Exhibit 3 identifies specific targeted additions of renewable resources. (Exhibit 3 contains competitively confidential information that has been redacted from the public version.) Those additions are listed as "Targeted Additions." APS incorporated the addition of "generic" projects to mimic the non-linear effect on both energy contribution and program costs.

¹³ CEC-300-2006-004, Building a "Margin of Safety" into Renewable Energy Procurements: A Review of Experience with Contract Failure, January 2006.

¹⁴ A.A.C. R14-2-1801.K defines this term.

ATTACHMENT A

APS RES Implementation Plan 2008 to 2012

The project additions included in Exhibit 3 were used to simulate the impact to the program budget and to demonstrate impacts to procurement timing.

New renewable generation resources (beyond 2012) are determined based on compliance with the energy target for a given year. When existing resources are inadequate to meet the requirement, APS used a blend of renewable resources to simulate the capacity additions required. The economics of a particular resource or technology will ultimately determine the extent to which it is employed in the portfolio; however, at this early phase of RES planning, APS assumes a diverse set of resources and technologies will be employed. The details of these assumptions are included in Exhibit 3.

For each technology, the planning model incorporates an assumed capacity factor. The modeled capacity factors are based on APS's review of technical performance information for each technology, discussions with project developers, and a review of published information related to currently operating commercial renewable resources.

D. Distributed Energy

APS recognizes that DE is an important component of the renewable energy goals of the RES, and, as part of this Plan, APS proposes a funding level it believes necessary for compliance each year to support the distributed generation program. APS recognizes that uncertainty exists with respect to the proposed incentive levels and the total number of RECs that they generate; however, in order to comply with the DE targets, APS believes the proposed funding level is necessary to accommodate required consumer demand for DE.

APS has requested a reset of its current EPS adjustor necessary to recover only the 2008 estimate for the DE program, as previously discussed. Increases in the adjustor will be required in future years for APS to meet the DE requirements in the RES. APS believes that adjusting the funding annually allows APS, together with the ACC, to implement a program with a clear understanding of program performance and costs without over collecting funds from customers in the near-term or compromising the overall resource goals of this Plan and the RES.

Commission Staff initiated the UCPP working group described in A.A.C. R14-2-1810 in June 2006, and APS participated in all of the working group efforts. The working group made significant progress towards the development of recommendations to Commission Staff, but a final report has not yet been completed. APS has used the approach developed by the UCPP working group for the Company's proposed DE incentive program. This working group made considerable progress towards identifying program workflows, technology sensitive incentive structures and levels, and technology specific requirements and limitations. The efforts of the working group provided APS with insight on the anticipated potential contributions from technologies not previously included in APS's DE programs. Planning models, implementation strategies, and budgeting for the DE program were all designed with specific consideration for the insight from the UCPP working group. In addition, APS relied on over six years' experience with its Solar Partners Incentive Program, as well as ongoing dialogue with many industry stakeholders.

ATTACHMENT A

APS RES Implementation Plan 2008 to 2012

i. Anticipated Distributed Energy Program Outcomes

As part of this Plan, APS developed a planning tool to help anticipate DE program outcomes, both from energy and budgetary perspectives. In developing the anticipated program outcomes, a number of assumptions about technologies and customer preferences were required. The assumptions included the anticipated number of projects by technology requesting incentives and the anticipated energy contribution from each DE project. Anticipated energy contribution was described by assumptions on average project size and average project production. The detailed assumptions were required for purposes of budget and planning; they are not intended to reflect allocations, funding caps, or preference for any one technology. The assumptions are detailed in Exhibit 4.

Incentives were drawn from the draft UCPP working group efforts and have been included in the APS Distributed Energy Administration Plan ("DEAP"). The DEAP is a separate document submitted in conjunction with the Implementation Plan in general compliance with A.A.C. R14-2-1810.B. The DEAP, generally described below, details different incentive types for use in the DE program. For planning purposes, assumptions about customer preference for the variety of incentive alternative were required. Planning assumptions are also detailed in Exhibit 4A.

APS's proposed DE budget, combined with the planning assumptions, results in specific outcomes. (Exhibits 4B and 4C). The actual results of program implementation are likely to differ from those anticipated by APS's planning efforts as customers learn more about the variety of technologies and applications available as a result of APS's program marketing, advertising, and partnership development efforts.

ii. Key Tenets of the Proposed Distributed Energy Administration Plan

APS's distributed energy program is detailed in the DEAP. Below follow several key tenets of APS's program as described in the proposed DEAP.

1. Administration

Project funding is not guaranteed until a reservation confirmation is received for each project from APS. To receive a reservation and an incentive, applicants must follow the established reservation, installation, and inspection procedures.

2. Equipment and Installation Requirements

Systems will be required to adhere to generally accepted industry standards, federal, state and local codes, all applicable regulatory requirements, and manufacturer recommendations for installation and operation. Systems must be installed by an Arizona licensed contractor holding an active certification for the technology being installed.

ATTACHMENT A

APS RES Implementation Plan 2008 to 2012

3. Incentives

Incentives are designed to defray some of the costs of a system designed to offset a typical load of a customer. Systems qualifying for DE incentives cannot qualify for other utility incentives.

Residential – Customers for residential incentives can apply for a one-time payment based on the DE system's capacity or based on the first year estimated savings provided by the DE system, dependant on the technology application. This type of incentive is referred to as an Up-Front Incentive ("UFI").

Non-Residential – Non-residential customers will either receive a UFI or a production incentive, which is paid over time. Projects receiving production-based incentives ("PBI") are paid based on system energy output rather than on system capacity. Projects with a total incentive value of \$75,000 or less (calculated as the present value of the total of incentive payments) will receive one-time capacity based incentives; all others will receive incentives based on production.

4. Market-Driven Projects

Projects that fall outside of the standard administrative, equipment, or incentive requirements for DEAP projects or projects that are solicited by APS to achieve specific program goals may be eligible for incentives as market-driven projects. These projects must be comparable to conforming projects in financial efficiency to be considered for incentives.

5. Customer Self-Direct

Eligible customers¹⁵ are required to declare the amount of the self-directed funding¹⁶ requested at least 60 days before the Implementation Plan is filed for the upcoming year. These projects must be comparable to conforming projects in financial efficiency to be considered for incentives. The amount of funds allocated to customer self-directed projects will be disclosed in the Plan for the next program year. (See also, APS Adjustment Schedule SDR, Self-Directed Renewable Resources).

iii. Distributed Energy Incentive Budgets

The proposed DE incentive budget for the five year planning window is described in Exhibit 4B. The incentive budget allocation is designed to result in half of the distributed energy to be from residential installations and half from non-residential.¹⁷ Annual increases in program budget are designed to accommodate both an increase in the DE energy target and to account for the increasing levels of commitment to PBIs, which are used primarily for non-residential DE resources. The incentive matrices incorporated as part of the DEAP describe incentive

¹⁵ A.A.C. R14-2-1801(H) – "Eligible Customer" mean an entity that pays Tariff funds of at least \$25,000 annually for any number of related accounts or services within an Affected Utility's service area."

¹⁶ A.A.C. R14-2-1809.

¹⁷ A.A.C. R14-2-1805.D.

ATTACHMENT A

APS RES Implementation Plan 2008 to 2012

reductions every two years of the program. Those planned reductions were designed by the UCPP working group in an attempt to reflect the anticipation that DE technologies will decline in cost as market penetration and product availability increases. Three specific allocations are described in Exhibit 4B. They include: non-residential UFI; non-residential PBI; and residential UFI.

The DEAP describes potential funding for customer self-directed projects. As part of the DEAP, a budgetary earmark is required to fund projects meeting the criteria of customer self-directed projects. To date, no funds have been paid to APS as part of the RES, and, therefore, no projects currently qualify for customer self-directed funds. As a result, in this initial Plan, no allocation has been established.¹⁸

As was previously described in this Plan, the annual funding level for DE incentives was established based on the estimates of the energy needed for compliance, anticipated consumer demand, projected sales and development time frames, variations in the levels of technology maturity, and availability of equipment for installation. In the event that funds collected for use in the DE incentive program are not fully subscribed in a program year, those funds will be applied to the next program year and allocated to achieve the required energy outcome between residential and non-residential projects.

iv. Marketing, Advertising and Partnership Development

To foster consumer awareness and interest in the DE incentive program, and in response to Commission direction, APS proposes to employ a multifaceted marketing campaign. The campaign will be designed to address three primary goals, all aimed at increasing participation in DE programs. Those goals are: 1) to create heightened awareness of APS's DE incentive programs, both for customers and stakeholders; 2) to create messages that deliver sufficient motivation to make renewable distributed energy a compelling product for both individual consumers and businesses in APS's service territory; and 3) to identify APS's DE incentive programs as a customer choice to address the growing energy needs and environmental concerns of Arizona.

The objectives of all actions under the marketing campaign will be to motivate APS customers to "think" about renewable DE, to "believe" in the ability of DE to support both individual and statewide renewable resource goals and to "act" to use the DE incentives. To accomplish these objectives, the marketing campaign will bring together a combination of pointed and motivating messaging, identify critical program partners, motivate partnership development, drive community outreach, and employ an effective and convincing use of media, both placed and earned.

The marketing campaign will include a variety of important strategies to accomplish the program goals. A few of the key strategies will include:

¹⁸ A.A.C. R14-2-1809.A.

ATTACHMENT A

APS RES Implementation Plan 2008 to 2012

- Implementation of a research program that will identify the most effective messages to overcome purchase barriers for residential customers, builders, and commercial customers.
- Creation of a campaign for DE energy that motivates Arizonans to take a new/second look at the benefits and reliability of DE technologies.
- Utilization of targeted media (both placed and earned) to raise visibility of renewable DE alternatives.
- Creation of strategic alliances that allow for maximum exposure of the APS DE message to specifically targeted audiences.
- Use of the APS website and customer communications vehicles to deliver DE messages.
- Creation of sales tools to support both residential and non-residential customer acquisition.

In developing a budget for the DE marketing campaign, APS consulted with a nationally recognized renewable resource consulting firm, reviewed available data for customer program marketing budgets among other states and utilities, and considered the level of anticipated effort to create consumer demand based on the breadth of available technologies and the proposed DE incentive budget. The proposed annual budget is detailed in Exhibit 2.

E. Implementation and Administration

In developing both strategy and a budget for implementation of the RES, a logical separation was created between those elements required to support the renewable generation portion of the program and the DE portion of the program. Renewable generation involves expertise in utility scale renewable generation technologies, competitive procurement and evaluation processes, project siting, utility integration, transmission and distribution related issue, complex contract negotiations, and contract management. The DE program is a mass market program that involves thousands of individual interactions requiring customer communication, interconnections, inspections, customer billing, and a sophisticated system to monitor REC production. Of course, certain resources are used to support both portions of the RES and they are characterized as such in the descriptions that follow.

i. Resources Required for the Renewable Generation Program

The renewable generation program requires knowledge area experts to identify those aspects of renewable generation procurement, engineering, and market analysis that are unique from those same areas in conventional energy operation and to coordinate with the impacted operational areas of APS to seamlessly integrate renewable resource management into APS's standard business practices. The knowledge area experts comprising the renewable generation administrative team include the personnel necessary to manage the program, which includes establishing policies and procedures, procuring renewable generation, handling contract administration and construction management, managing benchmarking and resource integration studies, and performing program monitoring and compliance reporting.

ATTACHMENT A

APS RES Implementation Plan 2008 to 2012

Many APS personnel support the program, but are not part of the administrative team, and those employees are not included in the program costs. These personnel are considered “non-incremental” and are required to support the general operations of the Company and have responsibilities that are not directly related to the non-distributed program. This includes, but is not limited to, regulation and pricing, accounting, legal, contract administration, contract settlement, transmission planning, power and gas marketing, and resource planning.

ii. Resources Required for the Distributed Energy Program

The implementation strategy for the DE program was developed with the following targets:

- Developing an accurate, efficient and customer friendly process.
- Integrating the program processes into the general business operations.
- Creating a scalable process that responds to adjustments in the volume of program participation.
- Supporting the strategic marketing efforts of the program.

To accomplish the objectives set forth requires a significant investment in program implementation. The DE program requires a significant number of individual transactions and each transaction impacts numerous parts of APS business infrastructure. As such, implementation costs for the DE program are significant.

1. Program Resources

The implementation team is comprised of the resources necessary to execute the DE incentive program. This includes the fixed payroll personnel required to administer the reservation and interconnection applications and agreements, review system design for conformance with DEAP and interconnection requirements, process incentive payments, answer customer and installer questions about the program, and perform field inspections. It also includes the variable payroll personnel required to program and install bi-directional and performance meters, tag utility equipment to identify potential backfeed sources, and provide billing support to partial requirements customers. This also includes the personnel required to manage the execution of the program, develop and execute the marketing and advertising programs, and provide ongoing program monitoring and compliance reporting. The number of implementation team members required is proportional to the number of program participants.

There are also resources supporting the program that are neither part of the administrative nor the implementation teams. These personnel are considered “non-incremental” and are required to support the general operations of the utility and have responsibilities that are not directly related to the distributed program. This includes, but is not limited to, regulation and pricing, accounting, legal, contract administration, and meter reading.

2. Material Costs

Measuring the actual number of kWh returned to the grid by DE resources requires the use of a bi-directional meter rather than a standard utility meter. The incremental cost charged to the

ATTACHMENT A

APS RES Implementation Plan 2008 to 2012

RES is the difference in cost between the bi-directional meter and the standard utility meter.

For compliance verification and program evaluation purposes, the DEAP proposes to capture an annual meter read for all DE systems generating electricity. APS believes that customers will also be interested in the ability to track total kWh generated by their system. To facilitate both the meter read capture requirement and to help customers track the kWh production by the DE system, APS plans to install and read the system meter for all participants in the program. The only costs charged to the RES are those costs associated with providing the second meter to record system production. There are also incidental material costs associated with the program, including, but not limited to, system locks, tags, inspection tools and transportation for inspection personnel.

APS may also install an interval recording meter on a sampling of sites that will be used by load research to conduct studies on the coincidence of solar output vs. APS system load. The only material cost charged to the Program will be the incremental costs of the interval recording meter.

3. Technological Improvements Required

The process flow to effectively and efficiently implement the DE incentive program requires integration with existing systems, including customer billing, the APS.com website, program and operations databases, accounting systems, and dispatch and scheduling tools. This investment is required to ensure integrity and support the scale of the program as it is described in the Plan. The technology tools to support the distributed incentive program that APS will develop and integrate into existing systems include:

- An agreement processing and workflow management tool — This tool will provide an interface through the APS.com website to allow customers and vendors to complete and submit all program forms and agreements on-line, with data to be stored in a central database. This tool will include an integrated workflow management to provide status tracking, work orders, and scheduling. The tool will also integrate into all major systems, including the billing system, and the operations and accounting databases.
- Automated customer billing — The readings from the bi-directional meter will be integrated into the APS billing system. The credit for the energy sold back to the APS system will be calculated within the billing system and will appear on the customer's standard APS bill.
- Performance information tools — The readings from the system meter will be integrated into the APS billing system. Those readings will be displayed on the customer's regular billing statement. A tool will also be available to assist the customer in projecting energy dollar savings based on kWh output from a "typical" DE system.

ATTACHMENT A

APS RES Implementation Plan 2008 to 2012

- Reporting and maintenance — Data capture necessary for ongoing program monitoring and compliance reporting will be facilitated by developing standard reports and a reporting tool for ad hoc queries.

F. Renewable Technology Commercialization and Integration

APS proposes a budget allocation for studies related to commercialization and integration of renewable resources. The purpose of this budget allocation is to enhance and accelerate the development, deployment, commercialization, and utilization of renewable resources for the benefit of APS customers.

APS will prioritize commercialization and integration studies to help meet the accelerated RES goals for renewable resources. As part of APS's long standing commitment to renewable resources, several studies related to commercialization and integration are already underway. Those studies and ongoing experience with renewable resources will help identify additional study subjects necessary to achieve program goals.

Activities undertaken as part of this program may be supported either by APS solely, or in partnership with other organizations and entities including private industry, public research institutions, and government laboratories. In planning and funding these activities, APS intends to take full advantage of opportunities to leverage state and federal research and development efforts and supporting funding opportunities. Specifically, APS will strive to increase coordination efforts with the U.S. Department of Energy ("DOE"), the Arizona Department of Commerce Energy Office, and the national laboratories to realize greater investment of federal research funds in Arizona and specifically APS service territory. APS also intends to coordinate more closely with Arizona universities to better utilize those resources.

Studies presently underway that are currently funded by the EPS include:

- Arizona Renewable Resource Study — Jointly funded by APS, Salt River Project ("SRP"), and Tucson Electric Power Company ("TEP"), the study represents an independent analysis of potential renewable resources in Arizona. The analysis is being conducted by leading energy engineering consulting group, Black and Veatch, and will effectively establish a baseline understanding of renewable energy resources presently perceived as available within the Arizona. In addition, the study will define renewable energy technology applications, associated cost structures, as well as identify renewable energy market opportunities, which should encourage the development of renewable energy projects in Arizona.
- APS Wind Integration Study — This study drives extensive research that leverages available wind data within Arizona and evaluates the potential for incorporating utility scale wind into APS's system. The study will then specifically evaluate the costs that result from integrating wind into the APS system.

ATTACHMENT A

APS RES Implementation Plan 2008 to 2012

- Joint Utility Market Study — This joint effort will result in a statewide market study evaluating consumer receptiveness to the installation of distributed renewable energy equipment, particularly photovoltaic. Participants include APS, SRP, TEP and the Arizona Cooperative Utilities.
- Concentrating Solar Power Project Studies — APS, in conjunction with several regional utilities, has formed a Joint Development Group (“JDG”) to explore the possibility of issuing a joint RFP for energy from a large-scale (250MW) solar plant. This effort is intended to provide project developers with energy and capacity levels large enough to drive cost effective economics into the development of solar resources, in an attempt make solar generation more cost competitive with non-solar resources. The efforts of the JDG will require investment in studies related to project siting and specialized support for the development of an RFP.

In determining whether to fund new studies related to commercialization and integration, APS will consider three key functional areas:

- Renewable technologies and available resources — These include studies of the attributes, characteristics, and costs of renewable energy technologies and the availability and viability of renewable energy resources in the state of Arizona and the western United States. Specifically, APS believes it is valuable to explore geothermal resources, monitoring and forecast wind resources, evaluate attributes specific to solar sites for development, and investigate and field monitor small scale hydropower opportunities.
- Transmission and system integration impacts — These studies would be designed to provide APS with a better understanding of the operational impacts, costs of integration, and for the identification of opportunities with renewable energy resources in the APS generation, transmission and distribution systems. APS recognizes the critical importance of transmission in the success of the expansion of renewable generation. Any significant increase in renewable generation must be integrated into the long-term planning for transmission to be successful.
- Distribution system impacts — These studies will examine the impacts of distributed energy resources on the power distribution system. Specific areas of study would include impacts on the general distribution system, design and construction, operations and maintenance, safety, power quality, and load forecasting.

4. COSTS OF PROGRAM IMPLEMENTATION

The cost of the APS Implementation Plan is comprised of two key cost segments, renewable generation and distributed energy. A summary of the costs of those segments and the major components for each segment are included in Exhibit 2. As seen in Exhibit 2, APS currently

ATTACHMENT A

APS RES Implementation Plan 2008 to 2012

estimates the cost to comply with the RES to range between \$49 million in 2008 to \$97 million in 2012, with a 5 year total of \$353 million. The annual increases are driven mainly by the annually increasing energy targets.

RES funding is intended to cover the cost of utility scale renewable generation in excess of the cost of conventional resource alternatives, incentive payments for distributed energy resources, marketing expenses, and program implementation and administration costs. The costs for renewable generation are based on APS's most current insights into that market. The costs for distributed energy incentives and the program budget are based on incentives developed as part of the Commission Staff's working group and APS's best estimations of market uptake for the various technologies available to consumers.

At this time, APS is only requesting adjustor funding of \$43 million for 2008. (The current EPS adjustor would generate approximately \$10 million in 2008, which means the increase for the RES adjustor is \$33 million above what would otherwise be collected by the EPS adjustor.) The requested adjustor amount, along with the \$6 million already included in base rates, would total the \$49 million of funding needed to meet the requirement. APS intends to request additional funding in each successive year for the following calendar year's estimated cost. In other words, in 2008 APS will request funding for the 2009 calendar year as part of its 2008 Implementation Plan and so on. The estimates contained in Exhibit 2 would be updated each year to determine the necessary level of funding from customers.

APS Renewable Energy Standard Implementation Plan for 2008-2012

Exhibit 1

APS RES Program Summary

Exhibit 1 – APS RES Program Summary

Exhibit 1 outlines the annual APS renewable energy targets by renewable generation and distributed energy, anticipated needs, and summarizes the proposed budget.

Exhibit 1: APS RES Program Summary

APS RES Targets						
	2008	2009	2010	2011	2012	
APS Estimated Retail Sales (MWh)	29,496,411	30,590,443	31,598,208	32,608,199	33,636,828	
APS RES Target - % of Retail Sales	1.75%	2.00%	2.50%	3.00%	3.50%	
APS RES Target (MWh)	516,187	611,809	789,955	978,246	1,177,289	
Green Power Estimate (MWh) ⁽¹⁾	102,000	120,000	123,000	126,075	129,227	
Total Renewable Target (MWh)	618,187	731,809	912,955	1,104,321	1,306,516	
Renewable Generation (MWh)						
	2008	2009	2010	2011	2012	
Renewable Generation Target	566,568	640,038	754,964	859,759	953,329	
Existing Generation Owned/Contracted	454,162	496,215	496,215	496,215	496,215	
Additional/Banked Generation Needed	112,407	143,823	258,749	363,545	457,114	
Distributed Energy (MWh)						
	2008	2009	2010	2011	2012	
Distributed Energy % of RES Target	10.00%	15.00%	20.00%	25.00%	30.00%	
Distributed Energy Target	51,619	91,771	157,991	244,561	353,187	
Estimated Existing Distributed Energy ⁽²⁾	14,034	51,619	91,771	157,991	244,561	
Additional Distributed Energy Needed	37,584	40,153	66,220	86,570	108,625	
APS Renewable Energy Budget Summary (\$ MM)						
	2008	2009	2010	2011	2012	
Total Renewable Generation	\$ 6.9	\$ 13.8	\$ 14.0	\$ 14.1	\$ 20.3	
Total Distributed Energy	\$ 42.3	\$ 39.9	\$ 55.0	\$ 70.1	\$ 76.7	
Total Program Budget	\$ 49.2	\$ 53.7	\$ 69.0	\$ 84.2	\$ 97.0	

Notes:

(1) The Green Power (Rate Schedules GPS-1 and GPS-2) is included only for procurement purposes. APS intends to procure enough energy to achieve RES compliance and Green Power purchased by customers. The Green Power sold to customers will not be counted towards RES compliance.

(2) For 2008 the Estimated Existing Distributed Energy is assumed to be the estimated DE at the end of 2007. For the remaining years it is assumed APS achieves full compliance with the DE target.

Exhibit 2

RES Budget Summary

Exhibit 2 – APS RES Budget Summary

Exhibit 2 details the APS RES Program proposed budget for 2008 to 2012 by line item for both Renewable Generation and Distributed Energy.

Exhibit 2: APS RES Budget Summary (\$ MM)

	2008	2009	2010	2011	2012	2008-2012 Total
Renewable Generation:						
Energy Purchase						
Administration						
Implementation						
Commercialization & Integration						
Renewable Generation - Subtotal	\$ 6.9	\$ 13.8	\$ 14.0	\$ 14.1	\$ 20.3	\$ 69.1
Distributed Energy:						
Incentives	\$ 28.7	\$ 29.6	\$ 44.1	\$ 58.4	\$ 64.2	\$ 224.9
Customer Self Directed ⁽¹⁾	-	-	-	-	-	-
Administration						
Implementation						
Marketing & Outreach						
Commercialization & Integration						
Distributed Energy - Subtotal	\$ 42.3	\$ 39.9	\$ 55.0	\$ 70.1	\$ 76.7	\$ 283.9
TOTAL	\$ 49.2	\$ 53.7	\$ 69.0	\$ 84.2	\$ 97.0	\$ 353.0

Notes:

(1) Customer Self-Directed is a subset of the total Distributed Energy Incentive budget. As discussed in the Implementation Plan no customers are eligible or have requested self-direction at this point and therefore no allocation has been made.

APS Renewable Energy Standard Implementation Plan for 2008-2012

Exhibit 3

APS Renewable Generation

Exhibit 3 – APS Renewable Energy Projects and Estimated Cost

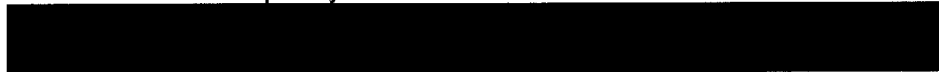
Exhibit 3 provides details of the APS renewable energy program. The following sections are included.

1. Expected energy contribution from existing and planned renewable generation.
2. Capacity for the existing and planned renewable generation.
3. Estimated cost per MWh above comparable conventional generation for existing contracts and planned projects.
4. Estimated total annual cost above comparable conventional generation for each of the existing and planned projects.
5. Renewable generation procurement targets.

In addition to the items discussed above, several assumptions were used to develop the APS Implementation Plan. These assumptions are discussed below.

New Capacity Assumptions

Renewable Generation Capacity Addition*



- * The actual technology and capacity added any year will be driven the best value alternative resulting from market procurement efforts.

Exhibit 3A: APS Existing and Planned Generation (MWh)

	2008	2009	2010	2011	2012	2008-2012 Total
Existing Contracts:						
APS Solar PV						
Saguaro Solar						
CE Turbo (Geothermal)						
Aragonne Mesa (Wind)						
27th Ave Landfill (Biomass)						
Snowflake White Mountain Power (Biomass)						
Total Energy - Contracted Projects						
Targeted Additions:						
Project 1 (Shown as Wind capacity) ⁽¹⁾						
Project 2 (Shown as Wind capacity) ⁽¹⁾						
Total Energy - Targeted Additions						
Total Generation⁽²⁾						

Notes:

- 1) The actual technology, energy, and capacity under contract will be primarily driven by the least cost and best fit project option resulting from market procurement effort.
- 2) APS intends to use RES eligible banked energy to fill any yearly shortfalls. It is currently estimated that bank will be 360,000 MWh at the end of 2007.

Exhibit 3B: APS Existing and Planned Generation Capacity (MW)

	2008	2009	2010	2011	2012
Existing Contracts:					
APS Solar PV					
Saguaro Solar					
CE Turbo (Geothermal)					
Aragonne Mesa (Wind)					
27th Ave Landfill (Biomass)					
Snowflake White Mountain Power (Biomass)					
Total Energy - Contracted Projects					
Targeted Additions:					
Project 1 (Shown as Wind capacity) ⁽¹⁾					
Project 2 (Shown as Wind capacity) ⁽¹⁾					
Total Energy - Targeted Additions					
Total Generation					

Notes:

- 1) The actual technology, energy, and capacity under contract will be primarily driven by the least cost and best fit project option resulting from market procurement effort.

Exhibit 3C: APS Cost Above Conventional Generation (\$ MM)

	2008	2009	2010	2011	2012
Existing Contracts:					
CE Turbo (Geothermal)					
Aragonne Mesa (Wind)					
27th Ave Landfill (Biomass)					
Snowflake White Mountain Power (Biomass)					
Total Energy - Contracted Projects					
Targeted Additions:					
Project 1 (Shown as Wind capacity) ⁽¹⁾					
Project 2 (Shown as Wind capacity) ⁽¹⁾					
Total Energy - Targeted Additions					
Total Generation					

Notes:

- 1) The actual technology, energy, and capacity under contract will be primarily driven by the least cost and best fit project option resulting from market procurement effort.

Exhibit 3D: APS Cost per MWh Above Conventional Generation (\$/MWh)

	2008	2009	2010	2011	2012
Existing Contracts:					
CE Turbo (Geothermal)					
Aragonne Mesa (Wind)					
27th Ave Landfill (Biomass)					
Snowflake White Mountain Power (Biomass)					
Targeted Additions:					
Project 1 (Shown as Wind capacity) ⁽¹⁾					
Project 2 (Shown as Wind capacity) ⁽¹⁾					

Notes:

- 1) The actual technology, energy, and capacity under contract will be primarily driven by the least cost and best fit project option resulting from market procurement effort.

Exhibit 4

APS Distributed Energy

**Annual Budget
&
Projected Program Outcomes**

Exhibit 4 - APS Distributed Energy Annual Budget & Projected Program Outcomes

Exhibit 4 details the annual budget and projected program of the APS DE program. The program outcomes are driven by the assumptions detailed in Exhibit 4. While the results included in the exhibit are the best estimates provided by APS, the actual results will likely vary based on customer participation, selection of specific technologies, and actual average project size.

The following documents are provided in this exhibit.

1. Customer participation assumptions used to estimate the program energy and capacity contribution.
2. DE program budget and allocations.
3. The projected program outcomes by energy, capacity, and number of installations.
4. The projected program results by technology.

Exhibit 4A: APS Distributed Energy Program Assumptions and Planning Inputs

	Residential Only (Y/N)	Non-Res. Only (Y/N)	Projects (#/1000)	Average Size (kW)	Capacity (kW)	Capacity Factor (hrs/year)	Capacity Factor (%)	Production (kWh)	Residential Contribution (%)	Non-Res. Contribution (%)	Percent UFI (%)	Percent PBI (%)
BIOMASS/BIOGAS (electric)	N	Y	2	80	160	6,132	70%	981,120	0%	4%	0%	100%
BIOGAS/BIOMASS - CHP (electric)	N	Y	4	166	664	6,132	70%	4,071,648	0%	15%	0%	100%
BIOGAS/BIOMASS - CHP (thermal)	N	Y	4	333	1,332	6,132	70%	8,167,824	0%	30%	0%	100%
BIOMASS/BIOGAS (thermal)	N	Y	9	100	900	3,504	40%	3,153,600	0%	12%	0%	100%
BIOMASS/BIOGAS (cooling)	N	Y	0	50	0	3,504	40%	0	0%	0%	0%	100%
NON-RESIDENTIAL DAYLIGHTING ⁽¹⁾	N	Y	90	50,000	4,500,000	NA	NA	4,500,000	0%	16%	100%	0%
FUEL CELLS	N										100%	0%
GEO THERMAL - (electric)	N	Y	0	1,000	0	7,008	80%	0	0%	0%	100%	0%
GEO THERMAL - (thermal)	N	Y	0	1,000	0	7,008	80%	0	0%	0%	100%	0%
HYDROELECTRIC	N										100%	0%
NON-RESIDENTIAL PV - small	N	Y	20	3.0	60	1,489	17%	89,352	0%	0%	100%	0%
SMALL WIND (off-grid)	Y	N	10	4.5	45	2,190	25%	98,550	4%	0%	100%	0%
SOLAR ELECTRIC:												
RESIDENTIAL (GRID-TIED)	Y	N	200	3	600	1,489	17%	893,520	40%	0%	100%	0%
NON-RESIDENTIAL (GRID-TIED)	N	Y	50	50	2,500	1,577	18%	3,942,000	0%	14%	0%	100%
RESIDENTIAL (OFF-GRID)	Y	N	15	2	30	1,489	17%	44,676	2%	0%	100%	0%
NON-RESIDENTIAL (OFF-GRID)	N	Y	5	5	25	1,489	17%	37,230	0%	0%	0%	100%
SOLAR SPACE COOLING	N	Y	1	200	200	1,621	19%	324,120	0%	1%	0%	100%
SOLAR WATER HEATING / SPACE HEATING ⁽¹⁾	N	Y	10	160,000	1,600,000	NA	NA	1,600,000	0%	6%	0%	100%
SMALL SOLAR WATER HEATING ⁽¹⁾	Y	N	575	2,050	1,178,750	NA	NA	1,178,750	53%	0%	100%	0%
NON-RESIDENTIAL POOL HEATING ⁽¹⁾	N	Y	5	100,000	500,000	NA	NA	500,000	0%	2%	0%	100%

1) System capacity and size is depicted in kWh as these items are not electrical generators

Exhibit 4B: APS Distributed Energy Projected Program Outcomes

	2008	2009	2010	2011	2012
Annual Program Cost (\$000s)					
Residential UFI	26,055	25,682	38,119	49,833	53,230
Residential PBI	-	-	-	-	-
Sub-Total Residential	26,055	25,682	38,119	49,833	53,230
Non-Residential UFI	661	770	1,143	1,495	1,567
Non-Residential PBI	979	2,122	3,815	6,028	8,392
Sub-Total Non-Residential	1,640	2,892	4,958	7,523	9,959
Total Residential and Non-Residential	27,695	28,573	43,077	57,356	63,189
UFI	26,715	26,452	39,262	51,328	54,797
PBI	979	2,122	3,815	6,028	8,392
Existing PBI Commitments	1,000	1,000	1,000	1,000	1,000
Total UFI & PBI	28,695	29,573	44,077	58,356	64,189
Annual Energy Production (MWHs)					
Residential	25,809	45,886	78,996	122,281	176,593
Non-Residential	25,809	45,886	78,996	122,281	176,593
Total Residential and Non-Residential	51,619	91,771	157,991	244,561	353,187
UFI	30,138	53,581	92,243	142,787	206,208
PBI	21,481	38,191	65,748	101,775	146,979
Total UFI & PBI	51,619	91,771	157,991	244,561	353,187
Incremental Installed Capacity (kW)					
Residential UFI	6,206	6,117	10,088	13,188	16,548
Residential PBI	-	-	-	-	-
Sub-Total Residential	6,206	6,117	10,088	13,188	16,548
Non-Residential UFI	38	44	73	95	119
Non-Residential PBI	3,637	4,241	6,994	9,144	11,473
Sub-Total Non-Residential	3,675	4,285	7,067	9,238	11,592
Total Residential and Non-Residential	9,880	10,402	17,154	22,426	28,140
Cumulative Total					
Residential	7,863	13,980	24,068	37,256	53,803
Non-Residential	5,509	9,794	16,860	26,099	37,691
Total Residential and Non-Residential	13,372	23,774	40,928	63,354	91,494
Incremental Number of Installations					
Residential UFI	7,355	7,249	11,956	15,630	19,612
Residential PBI	-	-	-	-	-
Sub-Total Residential	7,355	7,249	11,956	15,630	19,612
Non-Residential UFI	69	81	133	174	218
Non-Residential PBI	57	66	109	142	179
Sub-Total Non-Residential	126	147	242	316	397
Total Residential and Non-Residential	7,481	7,396	12,198	15,946	20,009
Cumulative Total					
Residential	9,320	16,569	28,525	44,155	63,767
Non-Residential	189	335	577	894	1,291
Cumulative Installed Capacity (kW)					
Residential UFI	7,863	13,980	24,068	37,256	53,803
Residential PBI	-	-	-	-	-
Sub-Total Residential	7,863	13,980	24,068	37,256	53,803
Non-Residential UFI	57	101	173	268	387
Non-Residential PBI	5,452	9,693	16,687	25,831	37,304
Sub-Total Non-Residential	5,509	9,794	16,860	26,099	37,691
Total Residential and Non-Residential	13,372	23,774	40,928	63,354	91,494
UFI	7,920	14,081	24,241	37,524	54,190
PBI	5,452	9,693	16,687	25,831	37,304
Total UFI & PBI	13,372	23,774	40,928	63,354	91,494
Cumulative Number of Installations					
Residential UFI	9,320	16,569	28,525	44,155	63,767
Residential PBI	-	-	-	-	-
Sub-Total Residential	9,320	16,569	28,525	44,155	63,767
Non-Residential UFI	104	184	318	492	710
Non-Residential PBI	85	151	260	402	581
Sub-Total Non-Residential	189	335	577	894	1,291
Total Residential and Non-Residential	9,508	16,904	29,102	45,048	65,057
UFI	9,423	16,753	28,842	44,646	64,476
PBI	85	151	260	402	581
Total UFI & PBI	9,508	16,904	29,102	45,048	65,057

Exhibit 4C: APS Distributed Energy Projected Program Outcomes by Technology

	2008			2009			2010			2011			2012		
	# Installs	MWths	kW	# Installs	MWths	kW	# Installs	MWths	kW	# Installs	MWths	kW	# Installs	MWths	kW
BIOMASS/BIOGAS (electric)	1.3	617	101	1.5	720	117	2.4	1,187	194	3.2	1,552	253	4.0	1,947	318
BIOGAS/BIOMASS - CHP (electric)	2.5	2,561	418	2.9	2,987	487	4.8	4,926	803	6.3	6,440	1,050	7.9	8,081	1,318
BIOGAS/BIOMASS - CHP (thermal)	2.5	5,138	838	2.9	5,992	977	4.8	9,882	1,612	6.3	12,919	2,107	7.9	16,210	2,643
BIOMASS/BIOGAS (thermal)	5.7	1,984	566	6.6	2,313	660	10.9	3,815	1,089	14.2	4,988	1,423	17.9	6,259	1,786
BIOMASS/BIOGAS (cooling)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NON-RESIDENTIAL DAYLIGHTING ⁽¹⁾	56.6	2,831	NA	66.0	3,301	NA	108.9	5,444	NA	142.3	7,117	NA	178.6	8,931	NA
FUEL CELLS															
GEO THERMAL - (electric)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GEO THERMAL - (thermal)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HYDROELECTRIC															
NON-RESIDENTIAL PV - small	12.6	56	38	14.7	66	44	24.2	108	73	31.6	141	95	39.7	177	119
SMALL WIND (off-grid)	91.9	906	414	90.6	893	408	149.4	1,473	673	195.4	1,925	879	245.1	2,416	1,103
SOLAR ELECTRIC:															
RESIDENTIAL (GRID-TIED)	1,838.7	8,215	5,516	1,812.4	8,097	5,437	2,988.9	13,353	8,967	3,907.5	17,457	11,722	4,903.0	21,905	14,709
NON-RESIDENTIAL (GRID-TIED)	31.5	2,480	1,573	36.7	2,892	1,834	60.5	4,769	3,025	79.1	6,235	3,954	99.2	7,823	4,962
RESIDENTIAL (OFF-GRID)	137.9	411	276	135.9	405	272	224.2	668	448	293.1	873	586	367.7	1,095	735
NON-RESIDENTIAL (OFF-GRID)	3.1	23	16	3.7	27	18	6.0	45	30	7.9	59	40	9.9	74	50
SOLAR SPACE COOLING	0.6	204	126	0.7	238	147	1.2	392	242	1.6	513	316	2.0	643	397
SOLAR WATER HEATING / SPACE HEATING ⁽¹⁾	6.3	1,007	NA	7.3	1,174	NA	12.1	1,936	NA	15.8	2,531	NA	19.8	3,175	NA
SMALL SOLAR WATER HEATING ⁽¹⁾	5,286.2	10,837	NA	5,210.5	10,682	NA	8,593.2	17,616	NA	11,234.1	23,030	NA	14,096.1	28,897	NA
NON-RESIDENTIAL POOL HEATING ⁽¹⁾	3.1	315	NA	3.7	367	NA	6.0	605	NA	7.9	791	NA	9.9	992	NA
Total - Incremental	7,481	37,584	9,880	7,396	40,153	10,402	12,197.7	66,220	17,154	15,946	86,570	22,426	20,008.8	108,625	28,140
Total - Cumulative	9,508	51,619	13,372	16,904	91,771	23,774	29,102	157,991	40,928	45,048	244,561	63,354	65,057	353,187	91,494

¹⁾ System capacity and size is depicted in kWh as these items are not electrical generators

APS 2007 Renewable Energy Standard

Attachment B

Distributed Energy Administration Plan

ATTACHMENT B



Arizona Public Service Co.

APS
Distributed Energy
Administration Plan
August 2007

ATTACHMENT B

TABLE OF CONTENTS

1.	Overview.....	1
2.	Project Categories.....	2
2.1	Standardized Projects.....	3
2.2	Market-Based Projects.....	3
2.3	Customer Self-Directed	3
2.4	General.....	4
3.	Incentive Types.....	4
4.	Program Requirements.....	5
4.1	General.....	5
4.1.1	Reservations for New Generations	6
4.2	Installation and Equipment Specifications.....	6
4.2.1	Biomass/Biogas and CHP (Electric and Thermal) and Biomass/Biogas Cooling.....	8
4.2.2	Non-residential Solar Daylighting.....	8
4.2.3	Small Wind Generator	9
4.2.4	Photovoltaic Systems	10
4.2.5	Solar Space Cooling.....	11
4.2.6	Non-residential Solar Water Heating and Space Heating.....	11
4.2.7	Small Domestic Solar Water Heating.....	11
4.2.8	Small Domestic Solar Space Heating	12
4.2.9	Non-residential Pool Heating.....	13
4.3	Inspections	13
4.4	Metering and Meter Reading	14
4.5	REC Ownership	15
4.6	System Maintenance	15
5.	Installer and Dealer Qualifications	15
6.	Incentives	16
6.1	Funding Allocation	16
6.2	Incentive Principles.....	17

ATTACHMENT B

TABLE OF CONTENTS

6.2.1	Reservations for New Residential Construction	17
6.3	Standardized Incentives	18
6.4	Incentive Caps.....	18
6.5	De-Rating of Photovoltaic System Incentives	19
6.6	Payment of PBIs	19
6.7	Taxes.....	19
6.8	Assignment of Payment	19
6.9	Default.....	19
7.	Reservation Process Overview	20
8.	Extensions and Cancellation Policy.....	21
9.	Energy Reporting Program Monitoring.....	21
10.	DE Review Panel	22
10.1	Panel Structure and Function.....	22

ATTACHMENT B

ATTACHED EXHIBITS

Exhibit 1	Distributed Energy Incentives
Exhibit 1A	Incentives Years 1 and 2
Exhibit 1B	Incentives Years 3 and 4
Exhibit 1C	Incentives Year 5
Exhibit 2	Solar Space Heating Incentive Calculator
Exhibit 3	Conforming Project Indexing Calculator
Exhibit 4	PV Off-Angle and Shading Adjustment Table

ATTACHMENT B

ARIZONA PUBLIC SERVICE CORPORATION 2007 DISTRIBUTED ENERGY ADMINISTRATION PLAN

1. OVERVIEW

APS has prepared this Distributed Energy Administration Plan ("DEAP") in compliance with the Renewable Energy Standard and Tariff ("RES") requirement for filing of a Uniform Credit Purchase Program ("UCPP").¹

The RES requires that a portion of the renewable energy requirements be obtained from distributed energy ("DE"), and that the installed resources result from residential systems and non-residential systems in equal proportions. As part of its RES Implementation Plan, APS has indicated that it does not plan to install distributed resources at customer properties, but rather the installation of DE systems will be facilitated by providing customers with financial incentives for the installation of those resources.

Arizona Corporation Commission ("Commission" or "ACC") Staff initiated the UCPP working group in June 2006, and APS participated in all of the working group efforts. The working group made significant progress towards the development of recommendations to Commission Staff, but a final report has not yet been completed. The working group made considerable progress towards identifying program workflows, technology sensitive incentive structures and levels, and technology specific requirements and limitations. APS has used the approach and technology requirements developed by the UCPP working group for the DEAP. If, in the future, the Commission adopts UCPP requirements differing from those implemented as part of the DEAP, it may require amendment.

The efforts of the working group also provided APS with insight on the anticipated potential contributions from technologies not previously included in APS's DE programs. The DEAP and the associated planning models, implementation strategies, and budgeting for the DE program were all designed with specific consideration of the insights provided by the UCPP working group. In addition, in developing the DEAP, APS relied on over five years experience with its Solar Partners Incentive program, as well as ongoing dialogue with many industry stakeholders.

The DEAP details the process by which customers will obtain incentives; requirements associated with the selection, installation, and operation of the DE system; and the measurement of DE performance for compliance reporting and program evaluation. The DEAP is designed to provide uniformity and consistency in the administration of APS's DE program.

As part of the RES, the energy generated or displaced by the DE system is applied towards the percentage of the utility's renewable energy requirement.² The unit used to track kilowatt hours ("kWh") derived from renewable resources for purposes of compliance with the RES is the

¹ A.A.C. R14-2-1810.B - "No later than July 1, 2007, each Affected Utility shall file a Uniform Credit Purchase Program for Commission review and approval."

² A.A.C. R14-2-1805.B.

ATTACHMENT B

Renewable Energy Credit ("REC").³ One REC equals one kWh or kWh equivalent for systems that do not generate electricity.

Implementation of the DEAP will require updating and revising program materials and processes that were developed as part of the Solar Partners Incentive Program, APS's current DE incentive program for solar resources. Development of implementation program materials for the DEAP including the many new technologies will require significant effort. Developing technology and customer sensitive process for newly included technologies and incentive configurations will require time to ramp-up.

The DEAP will ensure that each customer with eligible technology will be afforded the opportunity to obtain a reservation. The processes described herein are based on experience with technologies and systems with which APS has considerable experience; technologies, incentive configurations, and development models which are newly incorporated may require special consideration until new implementation strategies and methods can be defined.

The following DE technologies are eligible for incentives:

- Biogas Electricity Generator, Biomass Electricity Generator
- Grid-tied and Off-grid Solar Photovoltaic Generators ("PV")
- Biomass Thermal Systems and Biogas Thermal Systems
- Non-residential Solar Pool Heating Systems
- Geothermal Space Heating and Process Heating Systems
- Geothermal Electricity Generator
- Renewable Combined Heat and Power System ("CHP")
- Non-residential Solar Daylighting
- Solar Heating, Ventilation, and Air Conditioning ("Solar HVAC")
- Solar Industrial Process Heating and Cooling
- Solar Space Cooling
- Solar Space Heating
- Solar Water Heater
- Grid-tied and Off-grid Wind Generators of 1 megawatt ("MW") or less
- Fuel Cells that use only renewable fuels
- New Hydropower Generators of 10 MW or less

2. PROJECT CATEGORIES

There are three project categories described by the DEAP: Standardized projects, Market-Based projects, and Customer Self-Directed projects.

³ A.A.C. R14-2-1801.N - "Renewable Energy Credit" means the unit created to track kWh derived from an Eligible Renewable Resource of kWh equivalent of Conventional Energy Resource displaced by Distributed Renewable Resources."

ATTACHMENT B

2.1 Standardized Projects

Unless noted otherwise in the DEAP, all information contained herein applies to the administration of standardized projects. By definition, standardized projects follow the procedures and incentives described in the DEAP. Incentives available for these projects are described in Exhibit 1. APS anticipates that the vast majority of projects facilitated by the DEAP will be standardized projects. The processes described for the standard projects are based on experience with technologies and systems with which APS has considerable experience; technologies and incentive configurations that are newly incorporated may require special consideration until new implementation strategies and methods can be developed.

2.2 Market-Based Projects

Since considerable uncertainty exists with respect to the DEAP's ability to meet all expected project variations with standardized incentive offerings, APS believes it is appropriate to fund market-based projects during each program year. That funding will be applied to projects which, for one reason or another, cannot comply with the requirements of the standardized incentive offerings. APS may also solicit market-based projects to meet specific program goals. For example, although the DEAP attempts to identify and accommodate a large range of potential DE project types, financing options, and system host alternatives, specific shortcomings were identified in the proposed approach. Those shortcomings include concerns for increasing cost effectiveness of residential incentives, facilitating installations for multi-tenant residential developments, and challenging DE developers to look at creative mechanisms by which to address the residential DE market.

Projects with staged completion dates, multi-participant or multi-system projects, projects involving more than one technology where an interrelated incentive was not developed, projects requiring new or unique agreement terms, or projects requiring timelines differing from those detailed in the DEAP may be eligible for incentives. In addition, the DEAP does not identify incentives for fuel cells and small hydroelectric facilities; those technologies may also be eligible for incentives as market-based projects.

Incentives used for market-based projects must achieve similar financial efficiency as those incentives detailed for a particular technology as part of the DEAP. Incentives applied for market-based projects must meet the lower of: 1) the maximum allowable incentive for the proposed technology, as described in the applicable incentive matrix attached as Exhibit 1; or 2) the average incentive of projects accepted by APS for disbursement for the proposed technology in the previous year. Some qualifying technologies will not have either of the previously described financial efficiency measures. Participants seeking to employ those technologies will work with APS to develop an appropriate incentive.

2.3 Customer Self-Directed

The Customer Self-Directed project funding option is available to eligible customers.⁴ The

⁴ A.A.C. R14-2-1801.H – "Eligible Customer" means an entity that pays Tariff funds of at least \$25,000 annually for any number of related accounts or services within an Affected Utility's service area.

ATTACHMENT B

eligible customer must declare that it will self-direct on or before March 31 of the year prior to the year for self-direction. Customer Self-Directed funds can only be requested for prospective years, they cannot include prior year payments, and they cannot exceed the level of funding paid by the eligible customer towards the RES in the year prior to the requested allocation.

Incentives used for Customer Self-Directed projects must also achieve similar financial efficiency as those incentives detailed in the DEAP (Exhibit 1). If the eligible customer wishes to apply Customer Self-Directed funds to a DE System or another application not described in the applicable Incentive Matrix, the customer must submit documentation describing the project economics and the requested incentive level. All projects proposed for Customer Self-Directed funding must meet the requirements described in the RES.⁵

Eligible customers who have facilities in the service territories of more than one affected utility can only apply for funds from APS that were collected by APS. The funds obtained from APS can only be used for projects in APS's service territory. Customer Self-Directed projects are also subject to the general requirements set forth in the DEAP including installation, operation, REC exchange, and system performance reporting.

For purposes of financing DE projects, funds for Customer Self-Directed projects may be assigned to third parties. Such assignment remains the sole right of the customer. (*See also*, APS Adjustment Schedule SDR, Self-Directed Renewable Resources).

2.4 General

Under some circumstances, such as for new residential or non-residential construction, a project may not identify the Participant at project initiation. Regardless of the project design, implementation, or timeline, a Participant must have installed a system that is ready for commissioning and, if grid-tied, have established an account to receive electrical service from APS before the incentive will be paid.

All parties to a Credit Purchase Agreement who are not the program Participant must provide proof of ability to fulfill their obligations associated with the project. Such proof is to be determined at the sole discretion of APS and may include financial statements, business licenses, and/or proof of insurance.

3. INCENTIVE TYPES

The DE Program offers two standard incentive options: Up-front Incentives ("UFI") and Production-Based Incentives ("PBI").

UFIs are those incentives where the Participant receives a one time payment based on the DE system's designed capacity, or a one time payment based on the first-year energy savings provided by the DE system. This type of incentive is applied to smaller non-residential installations and for all standard residential installations. PBIs allow the Participant to collect

⁵ A.A.C. R14-2-1809.B.

ATTACHMENT B

incentive payments in direct relation to the actual system production. Those payments are received by the Participant over time and are based on an agreed upon contract term. Incentive levels for both UFIs and PBIs are detailed in three incentive matrices included in Exhibit 1. The first matrix describes incentive levels for year one and two of the program, the second matrix describes incentive levels for year three and four of the program. The third matrix describes incentive levels for years five and six of the program. Each incentive matrix prescribes a decline from the incentive levels detailed for the preceding period of the program. Those declines were discussed in detail as part of Commission Staff's UCPP Working Group. In general, the declining incentive levels are designed to reflect several key expectations of the DE markets, which include: declining costs of DE technologies; economic efficiency resulting from increased demand on the DE technologies; and increased availability of equipment required in the development of DE systems.

4. PROGRAM REQUIREMENTS

Requirements detailed in the DEAP are designed to provide clarity for program Participants and DE developers; increase the certainty of energy generation and as a result, production of the RECs for APS's compliance with the RES; and to ultimately drive cost-effectiveness for the DE requirement in the RES.

4.1 General

This program is designed to facilitate Participant installation of DE resources to displace Conventional Energy Resource⁶ usage. Program incentives are designed to defray a portion of the costs associated with the installation of DE resources for the program "Participant." The Participant is either the account holder for the APS billing meter at the project site or the party holding legal right to the property in APS territory where the DE system will be located. Systems must be located on the Participant's property or supply a central plant that generates energy for the Participant. All systems must be in APS territory. A project developer that builds an eligible DE system that provides a portion of the system's energy output to a non-Participant must provide metering to document the energy produced by the DE system that is received specifically by the program Participant.

Funding is not guaranteed without written confirmation of a reservation from APS. The Participant must follow the reservation procedure outlined in the DEAP for APS to set allocated incentive dollars for the specific DE system proposed. If a Participant is receiving electrical service from APS, the Participant must not be delinquent in payments to the Company before incentive payment can be issued.

Specific funding allocations are used to implement the DE incentive program. Once funds have been exhausted in any one category of this program, a Participant applying for funding within that category may be placed on a waiting list.

⁶ A.A.C. R14-2-1801.C – "Conventional Energy Resource" means an energy resource that is non-renewable in nature, such as natural gas, coal, oil, and uranium, or electricity that is produced with energy resources that are not Renewable Energy Resources.

ATTACHMENT B

4.1.1 Reservations for New Construction

Reservations can be made for systems that will be installed as part of new residential or non-residential construction. Prior to receipt of a program incentive, a Participant must have installed a system that is ready for commissioning and, if grid-tied, have established an account to receive electrical service from APS before the incentive will be paid.

4.2 Installation and Equipment Specifications

Systems receiving incentives under this program must be installed according to manufacturers' recommendations and generally accepted industry standards. Installation of the system must be completed by an installer meeting the requirements described in Section 5.1 "Installer Qualifications." The dealer for the system must meet the requirements described in Section 5.2 "Dealer Qualifications." Requirements not specified in the DEAP, but which are applicable under the DEAP, include, but are not limited to, the following:

- The project must comply with all applicable local, state, and federal regulations.
- Installations must meet applicable governmental statutes, codes, ordinances, and accepted engineering and installation practices.
- Systems must be permitted with and pass inspection by the Authority Having Jurisdiction (AHJ) over construction projects in the Participant's locale, or, if the site is not governed by an AHJ, the Participant must provide a certification in lieu of AHJ clearance.
- If the inverter of the DE system is interconnected or in any way connected to the APS grid – a "Grid-Tied System" – the system must meet all applicable APS Interconnection Requirements.
- APS may request copies of any documents to assure compliance with government, institutional, or DE program requirements that are either explicitly or implicitly described by the DEAP.

If any of the requirements described in the DEAP conflict with APS approved rate schedules, or government or other institutional requirements listed above, the conflicting requirements in the DEAP may not be imposed.

All major components of the DE system must be new and must not have been previously placed in service in any other location or for any other application. A DE system purchased more than 180 days before the date that APS receives the reservation request will not be considered "new" under the DEAP. APS may consider exceptions to this timeframe when justified by the Participant in writing. The DE system must also comply with the technology specific criteria detailed below. When some technology-specific criteria reference third party standards, the requirements of those standards are fully applicable when referenced as part of technology specific criteria.

ATTACHMENT B

The rapid growth in national and international renewable energy programs is resulting in greater need for the development of standardization in design, performance measurement, system integrity/longevity/maintenance, and installation techniques. New standards are likely to develop in the near future for technologies included in the DE program, and APS reserves the right to incorporate new standards into plan requirements as necessary and appropriate. The following standards or standard development bodies are referenced as part of the technology specific criteria.

- The Active Solar Heating Systems Design Manual developed by the American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc. ("ASHRAE") in cooperation with the Solar Energy Industries Association ("SEIA") and the ACES Research and Management Foundation (the "Design Manual").
- Arizona state boiler regulations (A.A.C. R4-13-406).
- Select technology specific qualification requirements developed by the California Energy Commission ("CEC").
- Solar Rating and Certification Corporation ("SRCC"). The SRCC criteria and ratings can be viewed at www.solar-rating.org.
- The Underwriters Laboratory ("UL").

The technology standards are relied upon, in part, to develop a clear understanding of the DE system capacity or the expected energy production. Incentives offered under this program are based on system capacity and energy production. Therefore, to encourage transparency in program transaction and clarity for Participants, current and accurate technology standards are fundamental to the program's success.

Some technologies included as DE under the RES are less standardized from installation to installation, while other technologies are generally standardized, when no technology standard has been published. If no technology specific standard is referenced, at a minimum, to qualify for DE incentives, an Energy Savings and Designed Output ("ES&D") report shall be provided as part of the reservation.

The ES&D report must include either a testing certification for a substantially similar system prepared by a publicly funded laboratory, or an engineering report stamped by a registered professional engineer. The ES&D report shall provide a description of the system and major components, designed performance, system output and the report shall identify applicable standards and/or codes used in system design and a brief history of the components used in similar applications. If the system design differs from the recognized industry best practices, as described in the equipment qualifications listed in the DEAP for the qualifying technology, the ES&D report must contain a certification that the system design is at least as effective as the specified requirements.

Where the equipment qualifications detailed below are required for program participation, the technology specific installation guidance is provided to program participants to convey information on installation and operation practices that are most likely to achieve the DE system's designed output. The requirements described herein are not intended as engineering

ATTACHMENT B

recommendations, services, or technical advice. Engineering recommendations, design, and performance data will be provided to the Participant by their supplier, installer, or professional advisor. Although installation guidance is not currently mandated for a project to receive an incentive, it does reflect both industry and utility concurrence on those practices that are important for a technology to best achieve the designed output. APS reserves the right to modify equipment qualifications and/or installation guidance if APS becomes aware that such qualifications or guidance results in unsafe conditions, provides inappropriate results for our customer, or is inconsistent with program objectives.

4.2.1 Biomass/Biogas and CHP (Electric and Thermal) and Biomass/Biogas Cooling

Equipment Qualifications

- Systems must include a dedicated performance meter to allow for monitoring of the number of RECs produced.
- A complete ES&D report must be submitted. Biomass system installations involving a regulated boiler or pressure vessel are required to include in the ES&D report confirmation of conformance with all Arizona state boiler regulations; provide a qualifying boiler inspection identification number; and keep all applicable permits in good standing.

Installation Guidance

Because of the individual nature of biomass systems, care should be taken to make sure the system complies with all applicable permitting and regulatory requirements, including but not limited to, air emission standards and air permit regulations.

4.2.2 Non-residential Solar Daylighting

Equipment Qualifications

Energy savings and designed output for the system will be verified by submitting either a testing certification for a substantially similar system prepared by a publicly funded laboratory, or by submitting an engineering reporting stamped by a registered professional engineer or accredited AEE Measurement and Verification professional. The report shall describe the inclusion the following components as part of the daylighting system:

- A roof mounted skylight assembly with a dome having a minimum 70% solar transmittance.
- A reflective light well to the interior ceiling or a minimum 12" below roof deck in open bay areas.
- An interior diffusion lens.
- A minimum of one thermal break/dead air space in the system between the skylight dome and the interior diffuser.

ATTACHMENT B

- If artificial lighting systems remain a part of the installation, the system shall include automated lighting control(s) that are programmed to keep electric lights off during daylight hours.
- The system must provide a minimum of 70% of the light output of the artificial lighting system that would otherwise be used for all of the claimed period of energy savings, as measured in foot-candles.

Installation Guidance

All systems should be installed such that the skylight dome is substantially unshaded and have substantially unobstructed exposure to direct sunlight between the hours of 9 a.m. and 3 p.m.

4.2.3 Small Wind Generator

A small wind generator is a system with a nameplate rating of 1 (one) MW or less. The technology criteria described below are intended for small wind generators with a nameplate rating of 100kW or less. Systems larger than 100 kW will be required to submit a detailed package describing site selection, expected energy production, and an engineered system design and installation as part of an ES&D report.

Equipment Qualifications

The technology criteria described below are intended for wind generators with a nameplate rating of 100kW or less.

- Eligible small wind systems must be certified and nameplate rated by the CEC or other qualified third party selected by APS to provide certification and a nameplate rating. See www.consumerenergycenter.org/erprebate/equipment.html for a list of certified generators. For grid-tied or off-grid wind generators where an inverter is used, the CEC listed nameplate rating of the wind generator will be multiplied by the CEC approved weighted efficiency percentage listed for the inverter in the "List of Eligible Inverters" at www.consumerenergycenter.org/cgi-bin/eligible_inverters.cgi to calculate the wind turbine nameplate rating for use in determining the UFI payment.
- Grid-tied inverters used as part of the system shall be listed to Underwriters Laboratory standard UL 1741.
- The tower used in the installation must be designed by a registered professional engineer and installed by individuals familiar with local geotechnical conditions.
- The wind generator and system must include a five year warranty and an operation and maintenance plan for the full operational life of the system.

In addition to the requirements for small wind generators outlined above, systems nameplate rating larger than 100 kW will be required to submit an ES&D Report.

Installation Guidance

ATTACHMENT B

Location: a wind turbine hub should be at least 20 feet above any surrounding object and at least 28 feet above the ground within a 250-foot radius. Wind generators should be installed in locations with an elevation at or above the general elevation of the surrounding terrain.

Lot size: should be at minimum one-half acre. Municipalities and public facilities, such as schools and libraries, may not need to meet the minimum lot size requirements.

The installed system should be demonstrated to obtain at least a 15% annual capacity factor. The following are readily available methods for helping to demonstrate the potential for a 15% capacity factor, but other methods may be used. The installation location should have a demonstrated average annual wind speed of at least 9 MPH as measured at a height of no more than 50 feet above the ground. Average annual wind speed can be demonstrated by wind speed records from an airport, weather station or university within 20 miles of the proposed wind generator location, or by a 50 meter wind power density classification of Class 2 "Marginal" or higher on the "State of Arizona Average Annual Wind Resource" map, dated July 16, 2005 or later, as published by Sustainable Energy Solutions of Northern Arizona University. Northern Arizona University provides detailed wind resource maps as well as other resource services. For more information contact Northern Arizona University at <http://wind.nau.edu/maps/>.

4.2.4 Photovoltaic Systems

- All systems shall be installed with a horizontal tilt angle between 0 degrees and 60 degrees, and azimuth angle of +/- 110 degrees of due south. Since some installation alternates are less than ideal for energy production, some installation configurations for some systems receiving a UFI will not be eligible for the full incentive applicable to that system. APS will apply the PV off-angle and shading factor adjustment for the PV installation (Section 6.5).
- Photovoltaic modules must be covered by a manufacturer's warranty of at least 20 years.
- Inverters must be covered by a manufacturer's warranty of at least five years. The remaining operational life must be supported by a planned maintenance or equipment replacement schedule.

Grid-Tied Systems Equipment Qualifications

- The minimum PV array size shall be 1,000 W-DC.
- All photovoltaic modules must be certified by a nationally recognized testing laboratory as meeting the requirements of UL Standard 1703.
- All other electrical components used in the installation must be UL listed.
- The inverter must be listed to Underwriters Laboratories UL 1741

Off-Grid Systems Equipment Qualifications

- The minimum, single-system PV array size shall be 200 W-DC.
- All photovoltaic modules must be certified by a nationally recognized testing laboratory as meeting the requirements of the UL Standard 1703.

ATTACHMENT B

- All other electrical components used in the installation must be UL listed.
- "As-built" drawings shall be submitted to APS upon completion of the project and shall include an electrical three-line diagram, a site plan, and a plant location map.

4.2.5 Solar Space Cooling

Equipment Qualifications

- Submittal of a complete ES&D Report certifying:
 - The minimum cooling capacity of the system will be 120,000 BTU per hour (10 tons).
 - Solar collector panels used will have a SRCC OG-100 rating or laboratory documentation showing the panel energy output under controlled and replicable test conditions.

Installation Guidance

- The horizontal tilt angle of the collector panels should be between 20 and 60 degrees and the panel orientation should be between +/- 45 degrees of south.
- All systems should be installed such that the energy collection system is substantially unshaded and should have substantially unobstructed exposure to direct sunlight between the hours of 9 a.m. and 3 p.m.

4.2.6 Non-residential Solar Water Heating and Space Heating

Equipment Qualifications

Submittal of a complete ES&D Report that includes certification that solar collector panels used shall have a SRCC OG-100 certification or laboratory documentation showing the panel energy output under controlled and replicable test conditions.

Installation Guidance

- The horizontal tilt angle of the collector panels should be between 20 and 60 degrees and the panel orientation should be between +/- 45 degrees of south.
- All systems should be installed such that the energy collection system is substantially unshaded and should have substantially unobstructed exposure to direct sunlight between the hours of 9 am and 3 pm.

4.2.7 Small Domestic Solar Water Heating

Equipment Qualifications

- Domestic Solar Water Heating systems must be rated by the SRCC and meet the OG-300 system standard.
- The 'high' limit shall be set at a maximum of 160 degrees Fahrenheit.

ATTACHMENT B

- Contractors must provide minimum of a five year equipment warranty as provided by the system manufacturer, including a minimum warranty period of two years for repair/replacement service to the Participant. The remaining operational life must be supported by a planned maintenance or equipment replacement schedule.
- Systems shall be selected and sized according to the geographic location and hot water needs of the specific application. Reservation requests must include a manufacturer's verification disclosing that the system size and collector type proposed is appropriate for the specific application. The manufacturer's verification may be presented as a manufacturer's product specification sheet and must be included in the reservation request.
- Active, open-loop systems are not eligible for incentives except for active, open-loop systems that have a proven technology or design that limits scaling and internal corrosion of system piping, and includes appropriate automatic methods for freeze protection. Details disclosing conformance with this exception shall be submitted as part of the manufacturer's verification documentation.
- ICS systems shall have a minimum collector piping wall thickness of 0.058 inches. Details disclosing conformance with this requirement shall be submitted as part of the manufacturer's verification documentation.

Installation Guidance

- All systems should be installed such that the energy collection system is substantially unshaded and should have substantially unobstructed exposure to direct sunlight between the hours of 9 am and 3 pm.

4.2.8 Small Domestic Solar Space Heating

Equipment Qualifications

- The system must be supported by a five year equipment warranty including a minimum warranty period of two years for repair/replacement service to the Participant. The remaining operational life must be supported by a planned maintenance or equipment replacement schedule.
- Submittal of a report verifying that:
 - The system will be sized and the incentive calculated based on a Solar Space Heating Incentive Calculation Procedure. The input sheet and description calculation procedure is attached provided as Exhibit 2 (APS will make the calculation procedure publicly available upon program implementation);
 - The system will utilize OG-100 certified collectors; and
 - Any active thermal storage used for the solar space heating system will utilize only water as the storage element.
- The solar space heating incentive calculation does not suggest or imply that a full energy audit is required to qualify for the solar space heating incentive.

ATTACHMENT B

The intent is that industry professionals can utilize the calculation tool to aid in facilitating sound system design.

Installation Guidance

- The system should be installed with a horizontal tilt angle between 20 degrees and 60 degrees, and azimuth angle of +/- 60 degrees of due south. It is recommended that collectors be positioned for optimum winter heating conditions at a minimum tilt angle of 45 degrees above horizontal, or as recommended by the manufacturer for the specific collector type and geographic location of installation.
- All systems should be installed such that the energy collection system is substantially unshaded and should have substantially unobstructed exposure to direct sunlight between the hours of 9 a.m. and 3 p.m.
- Heat exchange fluid in glycol systems should be tested and flushed and refilled with new fluid as necessary every five years, or per the manufacturer's recommendations.
- It is recommended that the anode rod be checked and replaced per manufacturer's recommendations, but no less frequently than every five years.
- It is recommended that the system design include a timer, switch, or other control device on the backup element of the storage tank.
- The collectors and storage tank should be in close proximity to the backup system and house distribution system to avoid excessive pressure or temperature losses.
- It is recommended that in areas where water quality problems are reported to have reduced expected life of a solar water heater, that a water quality test is performed for each residence to screen for materials that, through interaction with the materials of the proposed system, may reduce the expected operational life of the system components. The Participant should consider contacting the manufacturer to determine if warranty or operational life will be affected.
- In areas subject to snow accumulation, sufficient clearance should be provided to allow a 12" snowfall to be shed from a solar collector without shadowing any part of the collector.
- Each system should have an operation and maintenance manual at the Participant's site, and each Participant must complete an initial start up and operation training review with the contractor at the time of system start up.

4.2.9 Non-Residential Pool Heating

Equipment Qualifications

- Submittal of a complete ES&D Report.

4.3 Inspections

ATTACHMENT B

DE systems must be permitted with and inspected by the Authority Having Jurisdiction ("AHJ") over construction projects in the Participant's locale or the Participant must provide to APS a Letter in Lieu of Electrical Clearance⁷ or other waiver acceptable to APS. Any inspections conducted by APS are in addition to, not in lieu of, these building and construction related inspections. Access to the system shall be made available to APS during normal business hours for the purpose of conducting the applicable APS inspection. Note that APS will at times be inspecting system components on the Participant side of the meter.

All grid-tied systems will be inspected by APS to ensure the system is connected to the grid in conformance with APS Interconnection Requirements.⁸ Under no circumstances is any grid-tied system to be installed in parallel or otherwise connected with the APS system until such time that the system has been inspected by APS and written authorization is received from APS. APS will normally conduct the interconnection inspection only after the system has been inspected by the AHJ.

APS will select a subset of DE program reservations for an APS DE Program conformance inspection. The selected systems will be required to pass the conformance inspection before the Participant is eligible to receive an incentive payment. The purpose of the conformance inspection is to ensure that the system has been installed in accordance with the terms, conditions, and specifications provided on the Reservation Application and Credit Purchase Agreement and with the requirements outlined in this DEAP. The conformance inspections for photovoltaic systems will normally also include verification of the PV off-angle and shading factor reported for the PV installation in the reservation.

APS will randomly select some DE Program installations whose systems will receive a maintenance inspection to field verify that the system is being operated in compliance with the terms and conditions agreed to in the Reservation Request and Credit Purchase Agreement and the requirements outlined in the DEAP. The purpose of the maintenance inspection is to gather information that will assist APS in its evaluation of the effectiveness of the DEAP.

4.4 Metering and Meter Reading

All DE systems must include a system dedicated kWh meter, or meters, which allows for measurement of system energy production (the "Performance Meter"). The Performance Meter must be installed in compliance with the APS Electric Service Requirements Manual (ESRM) Section 300, which is available on aps.com, and must be installed so as to record the renewable energy A/C power output produced by the inverter or generator. If Performance Meter output data is used to calculate a PBI, other metering arrangements may be required depending on the configuration of the system. The Performance Meters are in addition to the APS billing meter and must be appropriately identified as the "Photovoltaic, Wind, etc., Performance Meter." The Performance Meter must be calibrated to meet industry standards and must provide either direct kWh readings or readings which can readily be converted to kWh (RECs) using standard engineering conversions.

⁷ Available on [APS.com](http://aps.com).

⁸ Available on [APS.com](http://aps.com).

ATTACHMENT B

The Performance Meter is required to be located adjacent to the APS billing meter unless otherwise approved by APS.

In those circumstances where the DE system is a hybrid system (i.e., uses more than one technology), APS requires that a Performance Meter be in place to measure the RECs (kWh) produced from each renewable resource so that the information can be accurately recorded.

APS may, at its discretion, install APS-owned Performance Meters for system monitoring purposes. A Performance Meter owned and read by APS may facilitate APS's ability to gather performance data and to report system performance to the Participant on their standard APS bill.

System generation (REC production) must be reported annually to APS for UFI Participants, unless other arrangements have been approved by APS. For PBI Participants, quarterly Performance Meter reading summaries must be submitted to APS. APS will read the Performance Meters on PBI systems at least on an annual basis to validate reported system production.

4.5 REC Ownership

As part of APS's payment of a UFI, the utility will be given complete and irrevocable ownership of all RECs expected from system production for 20 years, the expected or planned effective life of the DE system. APS's payment of a PBI will assure APS complete and irrevocable ownership of the REC for the full duration of the PBI agreement. Where the agreement duration does not coincide with the PBI payment schedule, the system must be supported by system warranty or planned maintenance schedules for the entire agreement term. Renewable Energy Credits provided to APS as a result of a DE system installation will be applied towards APS' RES targets.

4.6 System Maintenance

To ensure a system benefit received by the REC purchase, APS requires that the Participant maintain and operate the DE system in APS territory for the specific duration detailed in the Reservation Request and Credit Purchase Agreement. If the DE system either needs to be removed from the Participant property or if it is no longer operational, the Participant must notify APS within five business days after the DE system is either removed from the property or is no longer operational. Short (those lasting less than one month) system "outages" as part of system repair or planned maintenance are anticipated as part of this program and need not be reported in accordance with the above requirement.

5. INSTALLER AND DEALER QUALIFICATIONS

The installer must possess a valid license on file with the Arizona Registrar of Contractors ("AZROC"), with a license classification appropriate for the technology being installed, or the installer must identify use of a contractor holding an appropriate license on file with the AZROC for the technology being installed. The installer must also provide proof of liability insurance. Proof of liability insurance must be provided as part of the reservation request. Installers have

ATTACHMENT B

the option to request that APS retain this information on file with APS rather than submit with each reservation request; however, under this option the dealer must certify that the information on file remains current and in effect with the submission of each Participant reservation request.

If the equipment dealer is party to the reservation request, the dealer must provide proof of possession of a business license that is in good standing with the appropriate agency(ies) and must also provide proof of liability insurance. Evidence of good standing and the copy of the proof of liability insurance must be provided as part of the reservation request. Dealers have the option to request that APS retain this information on file with APS rather than submit with each reservation request; however, under this option the dealer must certify that the information on file remains current in effect with the submission of each Participant reservation request.

6. INCENTIVES

6.1 Funding Allocation

As is described in APS's 2007 RES Implementation Plan, the annual funding level for DE incentives was established based on the estimates of anticipated consumer demand for the various technologies, project sales and development time frames, variations in the levels of technology maturity, and availability of equipment for installation. The proposed DE incentive budget and the incentive budget allocation are designed to result in half of the distributed energy to be from residential installations and half from non-residential.⁹

The incentive matrices in Exhibit 1 describe incentive reductions every two years of the program. Those planned reductions are designed to reflect the anticipation that DE technologies will decline in cost as market penetration and product availability increase. Three specific DE budget allocations are described in the 2007 APS RES Implementation Plan; they include non-residential UFIs, non-residential PBIs, and residential UFIs. Budget allocations for market-based projects are derived as a portion of the respective DE budget allocation which they support.

In the event that funds collected for use in the DE incentive program are not fully subscribed in a program year, those funds will be applied towards the next program year, and will be allocated to achieve the required energy outcome between residential and non-residential projects.

Funds are made available for project reservations on the first working day after January 1st of each program year. Funds for residential projects will be made available for reservations on a first-come, first-reserved basis.

Total non-residential funds will be equally divided into six periods (January and February, March and April, May and June, July and August, September and October, and November and December) with each equaling two calendar months. Non-residential reservation requests are submitted as a bid expressed in \$/REC (or \$/kWh) and, if a PBI, the preferred REC and payment terms. Each bid is evaluated by a project ranking "calculator." A sample ranking calculator was prepared as part of the Commission Staff UCPP working group; APS' ranking calculator will be designed to function in substantially the same manner as the sample calculator. The input sheet

⁹ A.A.C. R14-2-1805.D.

ATTACHMENT B

and description for the sample calculator is attached provided as Exhibit 3. APS will make the ranking calculator publicly available on aps.com.

In the event that demand for non-residential funds exceeds a period allocation, APS may provide reservations to those projects above the allocation depending on the current RES compliance status and availability of funding.

In the event that funds collected for use in the DE incentive program are not fully subscribed in a program year, those funds will be applied towards the next program year. The funds will be allocated to achieve the required energy outcome between residential and non-residential projects.

6.2 Incentive Principles

As part of the DEAP, residential systems are eligible only for UFIs. Non-residential systems may receive either a UFI or a PBI, depending on the technology and the installation size. UFIs were developed for technologies where the average project size results in a total incentive less than or equal to \$75,000. PBIs were developed for technologies where the average project size results in a total incentive totaling more than \$75,000, based on the net-present value of the total of incentive payments or the otherwise applicable UFI.

Incentive funds can be applied to a "project," which is the sum of all DE systems installed at a Participant site that are eligible for program incentives in a single calendar year. A Participant site can obtain a UFI for multiple projects, under separate reservations, up to \$75,000 at each Participant site per calendar year. Once the sum of incentives for all project(s) exceeds the \$75,000 limit, incentives for additional projects will take the form of a PBI.

6.2.1 Reservations for New Residential Construction

Incorporation of DE systems into the development of new residential construction requires the reservation of funds in a manner other than that described in the standard UFI process. Approved reservations for incentive funds for new construction will conform to the following provisions:

- a. Funds may be reserved for up to three years for a single development or sub-division. A single reservation may request incentive funding for multiple systems.
- b. All funds within a reservation must be allocated to specific lots within the development or sub-division.
- c. The reservation must specifically indicate the development schedule for the identified lots and the year when the incentive payment is expected. Once a project is initiated, funding "adjustments" can not exceed 10 percent of the requested annual funding.
- d. Funds reserved but uncollected as completed projects in one year will be forfeited.

ATTACHMENT B

- e. Once funds have been reserved for a lot, no future reservation may be applied to that lot or the same technology until the original reservation has expired.

6.3 Standardized Incentives

The incentives levels provided as part of the DEAP were collaboratively developed, and, in part, were created to help or expand incipient markets for DE, taking into account each technology's specific market conditions, and placing a portion of the cost on the Participant. Incentive levels are provided in accordance with the applicable year project incentive matrix included as Exhibit 1.

6.4 Incentive Caps

DE incentives can be applied to systems designed to serve only the typical load of the Participant. The assessment of that typical load does not preclude the periodic production of electricity in excess of the Participant's demand. Under some circumstances it is understood that select Participant installations will be designed to serve loads greater than that of the Participant. Under those circumstances, the incentive will be applied only to the fraction of the generation that is used to serve the typical Participant load. The DE incentives were developed separate and apart from other utility program incentives, such as those for demand side management projects. Systems are not eligible to receive DE incentives if incentives from other APS programs are received.

A PBI cannot exceed 60% of the "real project cost" for the DE system. Real project costs are defined as the undiscounted total system cost plus "acceptable financing" charges. Acceptable finance charges are finance charges used for the PBI incentive cap calculation and cannot exceed the current prime interest rate plus 5%. Financing charges must be disclosed as part of the commissioning package, if not disclosed before. The PBI incentive cap will decline in the third year of the program to 55% of the real project cost, and the cap will decline further to 50% of the real project cost in the fifth year of the program and beyond.

Dealer's and manufacturer's incentives are capped at 50% of the system cost basis. Dealers cannot include installation costs in the cost basis calculation. Dealers must provide verification for the cost paid for each system component. Manufacturers cannot include their own technology in the cost basis.

For residential solar hot water heating systems, Participants are required to contribute a minimum of 15% of the "actual system cost." The actual system cost will be calculated by assuming the full application of all available federal and state incentives, regardless of the Participant's ability to realize any particular incentive, adding the Participant contribution (15%), and finally adding the program incentive. If the incentive can be fully applied without exceeding the actual system cost, the Participant will receive the full incentive amount. If the incentive cannot be fully applied without exceeding the actual system cost, the incentive will be capped so as not to exceed the system cost.

ATTACHMENT B

6.5 De-Rating of Photovoltaic System Incentives

The productivity of photovoltaic systems is sensitive to the specifics of the installation method and location. In particular, these systems are impacted by shading and photovoltaic panel tilt angle and azimuth. This variability in system performance is taken into account when adjusting the available UFI level and determining the actual amount of incentive received by the Participant. Incentives for photovoltaic systems will be adjusted in accordance with the PV Off-Angle and Shading Adjustment Table attached as Exhibit 4.

6.6 Payment of PBIs

Participants utilizing PBI will be required to self-report monthly system production on a quarterly basis. The reported production may be verified by APS at any time. Payment for system production will be made on a quarterly basis.

6.7 Taxes

Participant is solely responsible for the payment of any and all taxes applicable to the DE resource and/or the incentive payment(s).

6.8 Assignment of Payment

Systems may be owned by third parties, and APS may make payments to such third parties upon the written consent of the Participant. Participants may assign payments to an installer, dealer, or developer. APS will consider assignment to other parties upon request by the Participant.

6.9 Default

If Participant fails to maintain and operate the DE system in APS territory for the period detailed in the Reservation Request and Credit Purchase Agreement, which is never less than ten (10) years from the date that it receives the incentive payment, the Participant shall be considered in default of the terms and conditions of the incentive payment agreement. The Participant must notify APS within five business days after the DE system is either removed from the Property or is no longer operational.

Liquidated damages will apply if the Participant fails to maintain and operate the DE system for at least one year from the date that the Participant receives the incentive payment. In such event, the Participant shall be responsible for reimbursing APS the total amount of the incentive. This reimbursement requirement shall not apply if, in APS's sole discretion based on information provided by the Participant, the DE system is not operational due to equipment malfunction or other disrepair and Participant is actively and reasonably making efforts to repair the DE system and return it to operation.

The foregoing stipulations also apply in the event that Participant sells the property on which the DE system is located, as follows: (a) Participant shall notify APS in writing promptly in the event that Participant sells the property where the system was installed; (b) if Participant sells the

ATTACHMENT B

property less than one year after it receives the incentive and the subsequent owner does not continue to operate and maintain the DE system and grant APS full title to and ownership of all RECs associated with the system, the Participant must reimburse APS the total amount of the incentive; and (c) if Participant sells the property more than one year after it receives the incentive, it may be considered in default unless the subsequent owner of the Property continues to operate and maintain the PV System and grants APS full title to and ownership of all environmental credits associated with the System.

7. RESERVATION PROCESS OVERVIEW

Participant submits a reservation request to APS: The Participant must submit a signed reservation request supplied by APS.

Participant receives reservation confirmation: After reviewing the reservation request, APS will assign a reservation status. If the reservation request is approved, APS will send a written confirmation to the applicant. Approved reservations will be logged in the order received.

If the reservation request is deficient in meeting one or more of the program requirements, APS will inform the Participant of the nature of the deficiency and will allow the Participant to correct the deficiency. If the reservation request is denied because funding is not available, the request will be placed on a waiting list and APS will send written notification to the applicant.

Proof of Advancement: The Participant may be required to submit Proof of Advancement (written progress report) to APS within 60 days of reservation approval for UFIs, and within 120 days of reservation approval for PBIs to retain an active reservation. The purpose of the Proof of Advancement requirement is to ensure that reservation dollars are allocated to projects that will advance to the installation stage. Reservations requiring Proof of Advancement will be notified at the time of reservation approval.

Design for review: Participant completes and submits a system design for review and approval by APS (if grid-tied). APS recommends that the system design be submitted prior to installation to ensure that the system will meet APS's interconnection requirements.

Participant Proceeds with Installation.

Grid-tied systems: Systems are required to pass an interconnection inspection that will be conducted by APS before the system can be authorized to operate in parallel to the APS grid. APS will conduct the interconnection inspection only after the system has been inspected by the AHJ, or if APS has received a Letter in Lieu of Electrical Inspection. If the DE system passes the interconnection inspection, APS will provide the Participant with a written document that provides "Permission to Operate." If the DE system fails the interconnection inspection, the reservation can remain active, as long as the deficiency is remedied within the defined reservation timeframe.

Commissioning Packet: Participant must submit a signed Commissioning Packet supplied by APS. At a minimum, the Commissioning Packet will include certification from the

ATTACHMENT B

installer/dealer and Participant that the system installed was consistent with the terms and conditions of the Reservation Packet and the DEAP. If a material change was made between the time APS approved the reservation and the date APS received the Commissioning Packet, the Participant must complete an Amended Application. If the change increases the incentive amount the system is eligible to receive, APS will confirm that DE program funding is available. If funding is not available, APS will only provide an incentive in the amount requested in the Reservation Packet. Changes in the project plan that result in increased system output will only result in additional incentives beyond the original reservation amount if RES funding is sufficient/available.

If the system is a photovoltaic system that has been selected to receive a conformance inspection, the incentive may be adjusted in accordance with the provision set out in Section 6.5 of the DEAP.

If the system has been selected to receive a conformance inspection, as detailed in Section 4.3, the incentive payment will not be processed until after the system has passed the conformance inspection.

APS sends incentive payment: APS will send the incentive payment or initiate incentive payments in accordance with the instructions provided by the Participant in the signed Commissioning Packet.

8. EXTENSIONS AND CANCELLATION POLICY

A Participant will receive a written notice of pending cancellation if all program requirements have not been met within the reservation timeframe. The reservation timeframe for UFIs is 180 days from the reservation confirmation date. For PBIs, the reservation timeframe is 365 days from the reservation confirmation. APS may grant an extension for up to 90 days following timely receipt of a Participant's written request for extension and may approve written extension requests beyond 90 days under extenuating circumstances. APS may request additional support for the Proof of Advancement to be considered the extension.

9. ENERGY REPORTING PROGRAM MONITORING

APS will track progress toward program goals on an ongoing basis to monitor program effectiveness and sufficiency of the funding allocation. APS will compile data received from conducting the conformance and maintenance inspections, meter readings, and analyze trends in Participant participation and technology installation. The data will be evaluated on an ongoing basis to better understand critical factors impacting the incentive structures and the overall effectiveness of the DEAP. If the DEAP need to be adjusted to reflect new information, changing market conditions, incorrect initial assumptions, or technological innovations, APS will bring those issues to the attention of the Commission in a timely manner.

APS will report on the productivity of all distributed resources on an annual basis. For PBI systems, APS will report on the actual metered production of each system as reported by the Participant and confirmed by APS. For systems receiving a UFI, APS will report on the total

ATTACHMENT B

installed capacity and projected productivity. APS will develop a method by which to calibrate the reported productivity and shall monitor that method for long-term accuracy.

On occasion, a DE system that received a UFI will be removed from the Participant property prior to the end of its agreement term without the permission of the utility. Also, on occasion, a DE system that had received a UFI will be in need of a repair which the Participant does not plan to complete. If either situation occurs, and if despite reasonable efforts on the part of the APS, the Participant will not reinstall or repair the DE system, then APS will continue to reflect in its annual compliance reporting the annual historic energy production for the system until the agreement term for the system has been completed.

In addition, APS will monitor that specific Participant and Property to ensure that an additional incentive is not provided for any new DE system on that property until the operational life of the incented system has been completed. APS will attempt to monitor the number of missing and unrepaired DE systems and shall summarize its observations in its annual compliance report.

10. DE Review Panel

As part of the DEAP, APS proposes the creation of a DE Review Panel ("Panel") for ongoing review and adjustment of certain DEAP elements. APS believes that a Panel with authority to expeditiously adjust the DEAP and program elements is critical to its ultimate success. Program elements may need to be adjusted to reflect new information, changing market conditions, incorrect initial assumptions, or technological innovations.

The discussion below is not intended to describe in detail the full functional implementation of the Panel, but, rather, recommendations for conceptual structure and intent.

10.1 Panel Structure and Function

The Panel should be a five member panel created and maintained to provide on-going review of program function and to efficiently facilitate incorporation of features that increase efficacy as more information is gained by program implementation. The Panel will review program elements, vote on suggested changes, and suggest to APS modifications to DEAP elements. If adopted, changes recommended by the panel and made to the DEAP by APS will be reported to the ACC promptly after their incorporation.

The Panel should include one representative from the ACC staff, three representatives from the distributed generation industry, and one representative from APS. The industry representatives should not exceed one each from a technology type and should reflect the diversity of technologies and consumer types.

The industry and ACC staff representatives should be appointed by the ACC Utilities Director. Selected representatives should serve two-year terms. No distributed generation industry representative shall serve more than two consecutive terms. The APS representative will be selected based on the sole discretion of the Company.

ATTACHMENT B

The review panel shall consider DEAP elements on the following subjects:

- Adjustment of incentive structures to reflect market response;
- Process related issues that affect market function;
- Development of new conforming incentives, as necessary;
- Arbitration of incentive or program borne conflicts.

The Panel will meet once per quarter (or as necessary) to assess the items related to the above-described purpose. The Panel will review input from stakeholders on items before it for consideration, and it is anticipated that on occasion stakeholders may be consulted by the review panel to provide additional input. Upon full consideration of an item, the review panel will vote on adoption of the specified recommendation. A unanimous vote on a subject would result in incorporation of the suggested change into the DEAP. Suggested modifications to the DEAP that do not receive a unanimous vote may be made as part of the following year's RES implementation plan filing.

Exhibit 1

Distributed Energy Incentives

UCPP WORKING GROUP - CONFORMING PROJECT INCENTIVE MATRIX

PROGRAM YEARS 1 AND 2

Source: Incentive Matrix Summary (7-27-2006).xls

TECHNOLOGY / APPLICATION	UP FRONT INCENTIVE ^{1,2} ≤ \$75,000 Total Incentive 20-Year REC Agreement	PRODUCTION BASED INCENTIVE ²			
		10-Year REC Agreement 10-Year Payment (\$/kWh)	15-Year REC Agreement 15-Year Payment (\$/kWh)	20-Year REC Agreement 20-Year Payment (\$/kWh)	20-Year REC Agreement 20-Year Payment (\$/kWh)
BIOMASS/BIOGAS (electric)	NA	0.060	0.056	NA	0.054
BIOGAS/BIOMASS - CHP (electric) ³	NA	0.035	0.032	NA	0.031
BIOGAS/BIOMASS - CHP (thermal) ³	NA	0.018	0.017	NA	0.016
BIOMASS/BIOGAS (thermal)	NA	0.015	0.014	NA	0.013
BIOMASS/BIOGAS (cooling)	NA	0.032	0.030	0.040	0.029
NON-RESIDENTIAL DAYLIGHTING	\$0.20 / kWh ⁷	NA	NA	NCP	NA
GEO THERMAL - (electric)	\$0.50 / Watt	0.024	0.022	0.030	0.022
GEO THERMAL - (thermal)	\$1.00 / Watt	0.048	0.045	0.060	0.043
SMALL WIND (grid-tied) ⁴	\$2.50 / Watt	0.145	0.135	0.180	0.130
SMALL WIND (off-grid) ⁴	\$2.00 / Watt	0.116	0.108	0.144	0.104
SOLAR ELECTRIC:					
RESIDENTIAL (GRID-TIED)	\$3.00 / Watt ⁸	NA	NA	NA	NA
NON-RESIDENTIAL (GRID-TIED)	\$2.50 / Watt ⁸	0.202	0.187	0.250	0.180
RESIDENTIAL (OFF-GRID)	\$2.00 / Watt ⁸	NA	NA	NA	NA
NON-RESIDENTIAL (OFF-GRID)	\$1.50 / Watt ⁸	0.121	0.112	0.150	0.108
SOLAR SPACE COOLING ⁵	NA	0.129	0.120	0.160	0.115
SOLAR WATER HEATING / SPACE HEATING ⁵	NA	0.057	0.052	0.070	0.051
SMALL SOLAR WATER HEATING ⁶	\$0.75 / kWh ^{7,9}	NA	NA	NA	NA
NON-RESIDENTIAL POOL HEATING	NA	0.012	0.011	0.015	0.011

Notes:

- 1) Residential projects are only eligible for up front incentives (UFI). UFI payments, whether residential or non-residential can not exceed 50% of the System Cost.
- 2) Non-residential projects with a total incentive of less than or equal to \$75,000 are only eligible for a UFI. Non-residential projects with a total incentive of greater than \$75,000 are only eligible for a production based incentive. The total of payments under a PBI can not exceed 60% of the Project Costs.
- 3) The CHP incentives may be used in combination for the appropriate components of one system.
- 4) The small wind PBI applies to a maximum system size of 100 kW. A larger wind system may apply for an incentive as a NCP.
- 5) The solar space heating and cooling incentives may be used in combination for the appropriate components of one system.
- 6) This category includes both traditional water heating and those systems combined with residential solar water heating used for space heating. Space heating applications require a report detailing energy saving for the complete system.
- 7) Rate applies to rated first year energy savings only.
- 8) Some installations will require an adjustment of the incentive as detailed in the PV Incentive Adjustment Chart.
- 9) Energy savings rating is based on the SRCC OG-300 published rating. The customer contribution must be a minimum of 15% of the project cost after accounting for and applying all available Federal and State incentives.

NA - Not Available

NCP - Incentives are available only under individually developed customer agreements for non-conforming projects.

DISTRIBUTED ENERGY ADMINISTRATION PLAN - STANDARD INCENTIVES

PROGRAM YEARS 3 AND 4

Source: Incentive Matrix Summary (7-27-2006).xls

UP FRONT INCENTIVE ^{1,2}
≤ \$75,000 Total Incentive
20-Year REC Agreement

TECHNOLOGY / APPLICATION	10-Year REC Agreement 10-Year Payment (\$/kWh)	PRODUCTION BASED INCENTIVE ²		
		15-Year REC Agreement 15-Year Payment (\$/kWh)	10-Year REC Agreement 10-Year Payment (\$/kWh)	20-Year REC Agreement 20-Year Payment (\$/kWh)
BIOMASS/BIOGAS (electric)	NA	0.054	0.050	NA
BIOGAS/BIOGAS - CHP (electric) ³	NA	0.032	0.029	NA
BIOGAS/BIOGAS - CHP (thermal) ³	NA	0.016	0.015	NA
BIOMASS/BIOGAS (thermal)	NA	0.014	0.013	NA
BIOMASS/BIOGAS (cooling)	NA	0.029	0.027	0.036
NON-RESIDENTIAL DAYLIGHTING	\$0.18 / kWh ⁷	NA	NA	NCP
GEO THERMAL - (electric)	\$0.45 / Watt	0.022	0.020	0.019
GEO THERMAL - (thermal)	\$0.90 / Watt	0.044	0.040	0.039
SMALL WIND (grid-tied) ⁴	\$2.25 / Watt	0.131	0.121	0.117
SMALL WIND (off-grid) ⁴	\$1.80 / Watt	0.105	0.097	0.094
SOLAR ELECTRIC:				
RESIDENTIAL (GRID-TIED)	\$2.70 / Watt ⁸	NA	NA	NA
NON-RESIDENTIAL, Small (GRID-TIED)	\$2.25 / Watt ⁸	0.182	0.168	0.162
NON-RESIDENTIAL, Large (GRID-TIED)	\$2.25 / Watt ⁸	0.182	0.168	0.162
RESIDENTIAL (OFF-GRID)	\$1.80 / Watt ⁸	NA	NA	NA
NON-RESIDENTIAL (OFF-GRID)	\$1.35 / Watt ⁸	0.109	0.101	0.090
SOLAR SPACE COOLING ⁵	NA	0.116	0.108	0.104
SOLAR WATER HEATING / SPACE HEATING ⁵	NA	0.051	0.047	0.045
SMALL SOLAR WATER HEATING ⁶	\$0.675 / kWh ^{7,9}	NA	NA	NA
NON-RESIDENTIAL POOL HEATING	NA	0.011	0.010	0.014

Notes:

- 1) Residential projects are only eligible for up front incentives (UFI). UFI payments, whether residential or non-residential can not exceed 50% of the System Cost.
- 2) Non-residential projects with a total incentive of less than or equal to \$75,000 are only eligible for a UFI. Non-residential projects with a total incentive of greater than \$75,000 are only eligible for a production based incentive. The total of payments under a PBI can not exceed 60% of the Project Costs.
- 3) The CHP incentives may be used in combination for the appropriate components of one system.
- 4) The small wind PBI applies to a maximum system size of 100 kW. A larger wind system may apply for an incentive as a NCP.
- 5) The solar space heating and cooling incentives may be used in combination for the appropriate components of one system.
- 6) This category includes both traditional water heating and those systems combined with residential solar water heating used for space heating. Space heating applications require a report detailing energy saving for the complete system.
- 7) Rate applies to rated first year energy savings only.
- 8) Some installations will require an adjustment of the incentive as detailed in the PV Incentive Adjustment Chart.
- 9) Energy savings rating is based on the SRCC OG-300 published rating. The customer contribution must be a minimum of 15% of the project cost after accounting for and applying all available Federal and State incentives.

NA - Not Available

NCP - Incentives are available only under individually developed customer agreements for non-conforming projects.

UCPP WORKING GROUP - CONFORMING PROJECT INCENTIVE MATRIX

PROGRAM YEARS 5 AND 6

Source: Incentive Matrix Summary (7-27-2006).xls

TECHNOLOGY / APPLICATION	UP FRONT INCENTIVE ^{1,2} ≤ \$75,000 Total Incentive 20-Year REC Agreement	PRODUCTION BASED INCENTIVE ²			
		10-Year REC Agreement 10-Year Payment (\$/KWH)	15-Year REC Agreement 15-Year Payment (\$/KWH)	20-Year REC Agreement 20-Year Payment (\$/KWH)	20-Year REC Agreement 20-Year Payment (\$/KWH)
BIOMASS/BIOGAS (electric)	NA	0.046	0.043	NA	0.041
BIOMASS/BIOGAS - CHP (electric) ³	NA	0.027	0.025	NA	0.024
BIOMASS/BIOGAS - CHP (thermal) ³	NA	0.014	0.013	NA	0.012
BIOMASS/BIOGAS (thermal)	NA	0.011	0.011	NA	0.010
BIOMASS/BIOGAS (cooling)	NA	0.025	0.023	0.031	0.022
NON-RESIDENTIAL DAYLIGHTING	\$0.15 / KWH ⁷	NA	NA	NCP	NA
GEO THERMAL - (electric)	\$0.38 / Watt	0.019	0.017	0.023	0.017
GEO THERMAL - (thermal)	\$0.77 / Watt	0.037	0.034	0.046	0.033
SMALL WIND (grid-tied) ⁴	\$1.91 / Watt	0.111	0.103	0.138	0.099
SMALL WIND (off-grid) ⁴	\$1.53 / Watt	0.089	0.082	0.110	0.080
SOLAR ELECTRIC:					
RESIDENTIAL (GRID-TIED)	\$2.30 / Watt ⁸	NA	NA	NA	NA
NON-RESIDENTIAL (GRID-TIED)	\$1.91 / Watt ⁸	0.154	0.143	0.191	0.138
RESIDENTIAL (OFF-GRID)	\$1.53 / Watt ⁸	NA	NA	NA	NA
NON-RESIDENTIAL (OFF-GRID)	\$1.15 / Watt ⁸	0.093	0.086	0.115	0.083
SOLAR SPACE COOLING ⁵	NA	0.099	0.092	0.122	0.088
SOLAR WATER HEATING / SPACE HEATING ⁵	NA	0.043	0.040	0.054	0.039
SMALL SOLAR WATER HEATING ⁶	\$0.574 / KWH ^{7,9}	NA	NA	NA	NA
NON-RESIDENTIAL POOL HEATING	NA	0.009	0.009	0.011	0.008

Notes:

- Residential projects are only eligible for up front incentives (UFI). UFI payments, whether residential or non-residential can not exceed 50% of the System Cost.
- Non-residential projects with a total incentive of less than or equal to \$75,000 are only eligible for a UFI. Non-residential projects with a total incentive of greater than \$75,000 are only eligible for a production based incentive. The total of payments under a PBI can not exceed 60% of the Project Costs.
- The CHP incentives may be used in combination for the appropriate components of one system.
- The small wind PBI applies to a maximum system size of 100 kW. A larger wind system may apply for an incentive as a NCP.
- The solar space heating and cooling incentives may be used in combination for the appropriate components of one system.
- This category includes both traditional water heating and those systems combined with residential solar water heating used for space heating. Space heating applications require a report detailing energy saving for the complete system.
- Rate applies to rated first year energy savings only.
- Some installations will require an adjustment of the incentive as detailed in the PV Incentive Adjustment Chart.
- Energy savings rating is based on the SRCC OG-300 published rating. The customer contribution must be a minimum of 15% of the project cost after accounting for and applying all available Federal and State incentives.

NA - Not Available

NCP - Incentives are available only under individually developed customer agreements for non-conforming projects.

Exhibit 2

Solar Space Heating Incentive Calculator

Solar Space Heating Incentive Calculation Procedure.

In Advance, please perform the Design Review and Utility Bill Review (if Applicable) for numbers to enter in Steps #1, #2 and #5.

Elevation Zone Table:

Min Elevation	Max Elevation	Heating Season Days	Daily Panel Heat Output
-1000	1000	105	0
1001	3000	140	0
3001	5000	175	0
5001	7000	210	0
7001	9000	245	0
9001	11000	280	0

Collector Thermal Performance Rating

Data From OG-100 Sheet

Category:	Delta T	Clear Day
A	-9 Deg. F.	0
B	+9 Deg. F.	0
C	+36 Deg. F.	0
D	+90 Deg. F.	0
E	+144 Deg. F.	0

Enter Solar Panel Make and Model Number Selected for Project:

Step #1: Enter the result of the Design Review of the Design Annual Building Loss = BTU/Year

Step #2: Enter the result of the Utility Bill Review of the Actual Annual Building Loss:
(If not Electric, Natural Gas or Propane Heat, enter 0) = BTU/Year

Step #3: Calculate the Lesser of the Result in Step #1 & Step #2 =
This is the Annual Building Heat Requirement. BTU/Year

Step #4: Enter Elevation of the Solar Space Heated Building: Feet AMSL

Step #4 cont: Number of Heating Days per Heating Season from Elevation Zone Table: Days per Year

Step #4 cont: Calculate Average Daily Building Heat Requirement = BTU/Day

Step #5: Enter Passive Heat Storage Specific Heat Capacity from Building Design Review: BTU/Deg. F.

Step #5 cont: Enter Maximum Daily Room Temperature Variation Allowed by Building Occupants: (Max of 10 Degrees F.) Degrees F.

Step #5 cont: Calculate Maximum Passive Heat Storage Capacity = BTU

Step #5 cont: Enter Total Active Heat Storage Heat Capacity from Building Design Review: BTU

Step #5 cont: Calculate Maximum Total Heat Storage Capacity = BTU

Step #6: Calculate the Lesser of the Average Daily Building Heat Requirement in Step #4 and the Maximum Total Storage Capacity in Step #5. This is the Maximum Useful Daily Solar Heat Input. BTU/Day

Step #7: Size the Solar Panels based on a total daily solar heat input no greater than the Maximum Useful Daily Solar Heat Input. Enter the single panel SRCC OG-100 Collector Thermal Performance Rating data in the Table Above. BTU/Day per Panel

Step #7cont: Enter the Total number of solar panels to be installed: # of Panels

Step #7cont: Calculate the Average Expected Daily Solar Heat Input: BTU/Day

Step #8: Calculate the Expected Annual Useful Solar KWH Heat Input using the Number of Heating Days times the Average Expected Daily Solar Heat Input / 3415 BTU/KWH: KWH/Year

Step #9: Enter the UFI per first year KWH UCPP Incentive Rate: \$/KWH

Step #9 cont: Calculate the Total Maximum UFI Payment Subject to Possible Limitation by the 50% of Initial Cost Cap & 15% Minimum Customer Contribution: \$

Step #10: Enter the Total Solar Space Heating System Initial Cost: This should not include costs for Passive Heat Storage or Building Heating System. \$

Step #10 cont: Calculate the Total Expected Federal and Arizona Incentives for this Project: \$

Step #10 cont: Calculate the 15% minimum of the Total Solar Space Heating System Initial Cost to be paid by Customer \$

Step #10 cont: Calculate the Total Actual UFI Payment: \$

Exhibit 3

Standard Project PBI Ranking Calculator

PBI INDEX CALCULATOR

Input Terms	
P1 Incentive Terms	10-year PBI, 10 year REC
P2 Project Cost (\$)	100
P3 Estimated Annual Production (kWh)	1
P4 Requested PBI (\$/kWh)	0.0100
Output Terms	
P5 Index Value	111
P6 Calculated Incentive Cap	60
P7 Total Incentive Payout	0

Pull-down box for input of PBI term

Input Project Cost

Input Estimated Annual Energy Production in kWhs

Input requested PBI rate

Index Value

UFI INDEX CALCULATOR

Input Terms	
U1 Technology Incentive Type	Up Front Incentive
U2 Capital Cost (\$)	100
U3 Capacity (kW)	1
U4 Estimated Annual Production (kWh)	1
U5 Requested Incentive (\$/Watt or \$/kWh)	0.0100
Output Terms	
U4 Index Value	7,358
U5 Total Incentive Payout	10

Pull-down Box for UFI type

Input Capital Cost of Project - (\$s)

For incentives based on capacity: Input Rated Size of System in kW, this input is not used for First Year Energy Savings.

Input Annual Energy Production in kWhs for System Capacity UFIs, otherwise, for First Year Energy Savings kWh savings.

Index Value

Input requested incentive. For System Capacity UFIs, input \$/Watt; otherwise, for First Year Energy Savings input \$/kWh.

Exhibit 4

PV Off-Angle and Shading Adjustment Table

APS - PV Off-Angle & Shading Incentive Adjustment Chart

Revised 06/23/2006

Array Azimuth Angle from Due South

Array Angle above Horizontal

Array Angle above Horizontal	Array Azimuth Angle from Due South											Array Angle above Horizontal			
	EAST					SOUTH					WEST				
0	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
5	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%
10	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%
15	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%
20	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%
25	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%
30	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%
35	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%
40	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%
45	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%
50	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%
55	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%
60	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%

Array Angle above Horizontal	Array Azimuth Angle from Due South											Array Angle above Horizontal			
	EAST					SOUTH					WEST				
0	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
5	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%
10	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%
15	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%
20	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%
25	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%
30	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%
35	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%
40	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%
45	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%
50	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%
55	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%
60	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%

Array Angle above Horizontal

Array Azimuth Angle from Due South

Shade Factor ¹	1.0	0.9	0.89 - 0.75	0.74 - 0.6
Percentage of Incentive	100%	90%	90%	65%

The system installation will receive the lowest applicable incentive adjustment, reading from both the Installation Angle Chart and Shading Adjustment

Notes: 1 "Shade Factor" is the percentage of annual solar insolation expected given latitude, shading and the available solar window.

APS 2007 Renewable Energy Standard

Attachment C

Renewable Energy Standard Rate Schedule



ADJUSTMENT SCHEDULE RES RENEWABLE ENERGY STANDARD

APPLICATION

The Renewable Energy Standard Surcharge shall apply to all retail Standard Offer or Direct Access service, excluding kWh served in accordance with rate schedules, SP-1 (Solar Partners), Solar-2, Solar-3, and Adjustment Schedules GPS-1 and GPS-2. All provisions of the customer's current applicable rate schedule will apply in addition to this surcharge. From time to time the RES program spending requirements will be evaluated and if necessary the charge and/or caps will be altered if approved by the Commission. Any new charges/caps will be applied in billing cycle 1 beginning in the month following Commission approval and will not be prorated. Details regarding the administration of this surcharge can be found in the filed Renewable Energy Standard Plan for Administration. The RES Adjustment Charge and the Demand Side Management Adjustment Charge may be combined on the customer's bill and shown on the "Environmental Benefits Surcharge" line.

RATES

The bill shall be calculated at the following rates:

All kWh	\$0.004737	per kWh
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SURCHARGE LIMITS

The monthly total of the Renewable Energy Standard Adjustment Charge shall not exceed the following limits:

Residential Customers	\$1.89	per service per month
Non-residential Customers	\$70.39	per service per month
Non-residential Customers with demand of 3,000 kW or higher per month for three consecutive months	\$211.16	per service per month

APS 2007 Renewable Energy Standard

Attachment D

Customer Self-Directed Renewable Resources Tariff



ADJUSTMENT SCHEDULE SDR SELF-DIRECTED RENEWABLE RESOURCES

APPLICATION

Adjustment Schedule Self-Directed Renewable Resources ("SDR") shall apply to any retail Standard Offer or Direct Access customers who, as a result of regular Company monthly billings, pay \$25,000 or more during a calendar year to the Company under Adjustment Schedule RES, Renewable Energy Standard ("RES"), as approved by the Arizona Corporation Commission ("ACC") in Decision No. XXXXX pursuant to A.A.C. R-14-2-1808.

ELIGIBILITY REQUIREMENTS

1. Funding Eligibility:

- a. The customer is eligible to receive funds pursuant to this schedule if the total of all RES related payments made to the Company for the customer's service account or accounts, individually or collectively, total \$25,000 or more in any one calendar year (January – December).
- b. Funds collected from the customer in any one year (the "payment year") will be available to the customer for self-directed projects in the following year (the "funding year"). Funds received during the funding year will not exceed payments collected by the Company in the payment year. In addition, if the customer has facilities in multiple service territories, only those payments collected by the Company are eligible for SDR funding.
- c. Customers requesting funds for self-directed projects must declare their intention by applying in writing to the Company on or before March 31 of the payment year. The application must include a description of the proposed project and its expected cost.
- d. The customer shall provide at least half of the funds necessary to complete the proposed project (A.A.C. R-14-2-1809.B).

2. Project Eligibility:

- a. SDR funds obtained by the customer from the Company may only be used for projects physically located within the Company's service territory.
- b. Projects specified in the Company's Distributed Energy Administration Plan ("DEAP") are eligible for SDR funding. Self-direct requesting customers must request incentives no greater than the prescribed incentives specified in the DEAP. If the customer wishes to apply funds to a project not specified in the DEAP, the customer must submit documentation detailing project economics and funding requirements.
- c. Any project proposed by the customer must meet the requirements for a Distributed Renewable Energy Resource described in the ACC's Renewable Energy Standard Rules (A.A.C. R-14-2-1802.B).
- d. For purposes of financing SDR projects, funds provided by the Company may be assigned to third parties. Such assignment will be at the customer's sole discretion. The Company assumes no liability for third-party assigned funds.

RENEWABLE ENERGY CREDITS

All Renewable Energy Credits derived from any project funded through this schedule, including generation and Extra Credit Multipliers, shall be applied to satisfy the Company's Annual Renewable Energy Requirement as provided for in A.A.C. R-14-2-1809.C.

APS 2007 Renewable Energy Standard

Attachment E

**Summary of APS Renewable Energy Reporting
Requirements**

ARIZONA PUBLIC SERVICE COMPANY

OTHER RENEWABLE ENERGY REPORTING REQUIREMENTS

Decision No. 58643, (June 1, 1994)
Integrated Resource Planning

Each company must develop a database of existing renewable energy resources within its system within six months from the effective date of this decision; these inventories should be revised annually and submitted to Staff each year as part of the historical data filings required under the IRP rules. Each company must prepare a three year renewable resource action plan as part of its filing requirements for an action plan under the Commission's IRP rules, starting with the plans to be submitted by December 31, 1995.

Decision No. 59601, (April 24, 1996)
APS Rate Reduction Agreement

APS shall file detailed semi-annual reports with Staff and in Docket Control on all DSM and Renewable activities, although confidential information need not be filed in Docket Control.

Decision No. 63354, (February 8, 2001)
APS Application for Approval of Environmental Portfolio Surcharge EPS-1

APS must file annual reports within 60 days of the end of a calendar year that list the amount of funds collected through the surcharge during the year, the amount of surcharge funds spent during the year, and a brief description of the projects for which the funds were spent.

Decision No. 66565, (November 18, 2003)
Variance to Allow Solar Thermal to Replace Natural Gas and be Recognized for the EPS

APS shall report to the Commission all solar thermal installations made purchase to this partial variance as part of its existing EPS reporting requirements.